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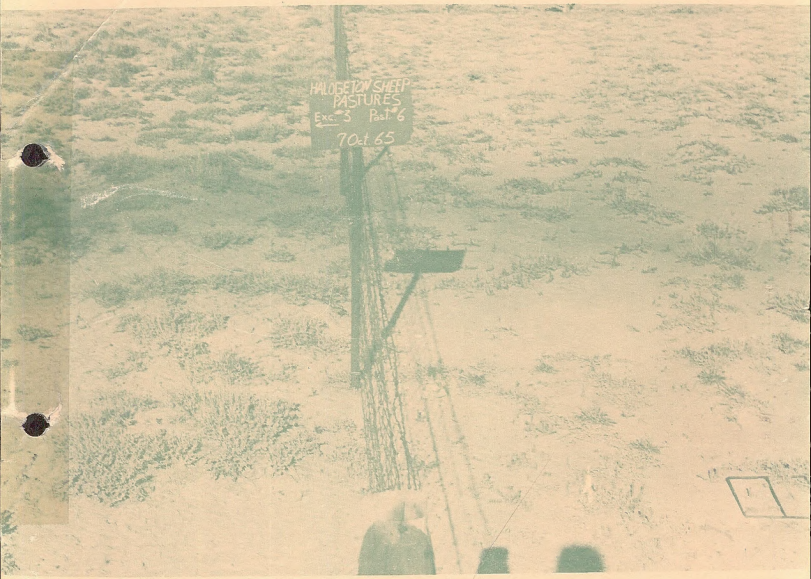
1965 RESULTS



HALOGETON RESEARCH

Arid Land Studies of Grazing Treatments, Ecology, Shrub Improvement and Control, and Moisture Relationships

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HALOGETON RESEARCH

Arid Land Studies of Grazing Treatments, Ecology, Shrub Improvement and Control, and Moisture Relationships

by

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After nine years of heavy winter grazing use on the Greybull study pastures saltbush plants show a definite deterioration as compared to the exclosure which has not been grazed. Annual weeds are much more abundant in the heavy grazed pasture than in the exclosures and the lighter use pastures.

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S E C T I O N I

WINTER SHEEP GRAZING STUDY ON SALTBUSH RANGE (GREYBULL)

Introduction

The experimental pastures used in winter sheep grazing study were established in 1956 by cooperative agreement with the Bureau of Land Management, the Bureau of Reclamation, and the Wyoming Agricultural Experiment Station. The study was initiated by the above agencies to determine the effect of different grazing intensities on: (1) spread of halogeton (*Halogeton glomeratus*), (2) production of Nuttall saltbush (*Atriplex nuttallii*), (3) sheep response measured in terms of weight change. The third objective was discarded after the 1960 study because of the greatly increased numbers of sheep needed to obtain the desired grazing intensity in a short period of time. The decreased grazing period would make any comparison of sheep weights between the different intensities meaningless.

The pastures are located approximately 15 miles northwest of Greybull, Wyoming (R95W, T35N, Sec. 3), in an arid area dominated by Nuttall saltbush. An average of 5.63 inches of precipitation per year has fallen during the past six years as measured by the University of Wyoming rain gauge (Table 1). It is of interest to note that more than 80% of the moisture, an average of 4.55 inches per year since 1960, occurred during the period from April 15 to October 15.

1965 Procedures

The study area consists of 640 acres which is divided into fenced pastures. The original modified randomized block design which was employed from 1956 through 1962, consisted of a holding pasture and two replications of pastures for light, moderate and heavy utilization, at 20, 40, and 80% use, respectively. These replicated pastures were 160, 80, and 40 acres in area. Following the 1962 grazing season it became apparent that response measured in terms of saltbush production was significantly different among the three rates of utilization. To determine more accurately the optimum rate of utilizatnn a new treatment was initiated. The 160-acre light use pastures each were divided into two 80-acre units. Optimum use on pastures 4a and 7a remained at 20%, but was increased to 30% on pastures 4b and 7b.

Production of saltbush was determined at two different periods during the season. In mid-July, plots were clipped in each of the three exclosures and in areas immediately outside the exclosures in adjacent pastures. These plots were 1' x 10' located at 5-foot intervals along a 100-foot line. In November, immediately prior to grazing, the production of saltbush was determined by clipping ten plots (5' x 20'), each 100 square feet in area in each pasture. After the animals had completed grazing on the pastures, another series of ten plots were clipped to determine utilization by the animals.

TABLE 1. Precipitation data (in inches) from University of Wyoming rain gauge, Dry Fork Halogeton Pastures. 1960-65.

Precipitation Periods	1960	1961	1962	1963	1964	1965	Avg.	Percent of Total
Winter								
October 15 - April 15	1.00	0.87	0.81	1.34	1.09	1.36	1.08	19.2
Spring								
April 15 - July 1	0.60	1.35	3.01	3.78	5.59	2.31	2.77	49.2
Summer								
July 1 - September 1	0.72	0.11	1.35	0.21	1.15	1.90	0.91	16.2
Fall								
September 1 - October 1	0.40	1.82	0.30	1.82	0.06	0.80	0.87	15.4
Total	2.72	4.15	5.47	7.15	7.89	6.37	5.63	100.0%
Growth Period Total	1.72	3.28	4.66	5.81	6.80	5.01	4.55	

Vegetational analyses were conducted by the point frame method on ten permanent 50-foot line transects in each pasture. Vegetation was evaluated on the basis of 300 point recordings on each transect by a systematic placement of the point frame which contained ten pins.

A total of 1,717 sheep were placed on the pastures on November 23. These were divided into groups approximately 600 to 900 head and allowed to graze in the pastures according to the time necessary to achieve the desired degree of utilization. Forage consumption was computed at a rate of 3½ lbs. of saltbush/sheep/day. The large numbers of animals did much to facilitate uniform distribution over the entire pasture area. The sheep were again furnished by Mr. Harry Grabert of Emblem to whom the University is most grateful.

The water was hauled to the sheep in a 1000 gallon tank on a truck provided by the BLM. The sheep were furnished all the water they would drink which proved to be about 3 gal/sheep/day.

1965 Results

The production values of saltbush for each pasture are shown in Table 2. The slight and light use pastures which produced 428.9 and 433.7 lbs. per acre respectively, continued to out-produce both the moderate and heavy use pastures which had production values of 263.8 and 181.8 lbs/acre. Analysis of statistical significance between rates of production under the different grazing treatments indicates that the slight use pastures were significantly different from the heavy use, but not from the light or moderate. The light use pasture was significantly different from the heavy but not significantly different from either the slight or the moderate, and the moderate use pasture was not significantly different from any of the other pastures. These data reflect the extreme variation which is inherent to production sampling in the saltbush type. Visual aspect of the pastures, however, indicates a very signficant difference with respect to saltbush

TABLE 2. Production of saltbush under different intensities of grazing (pounds air-dry forage per acre) on the Dry Fork Halogeton Pastures. 1965.

	Rate of Utilization and Pasture Numbers								
	Slight - 20%		Light - 30%		Moderate - 40%		Heavy - 80%		Mean
Year	4a	7a	4b	7b	1	5	2	6	
1958	166.8	165.9			136.8	186.7	117.1	184.7	159.7
Mean	166.4				161.8		150.9		
1959	225.9	221.1			212.9	255.9	107.5	235.8	209.8
Mean	223.5				234.4		171.6		
1960	129.2	95.6			106.3	108.9	71.7	67.9	96.6
Mean	112.4				107.6		69.8		
1961	152.9[a]	119.1[abc]			102.1[bc]	121.6[ab]	42.9	85.1	103.9
Mean	136.0				111.8		64.0		
1962	282.2[d]	300.8[d]			232.3[bc]	242.5[e]	201.6[ab]	197.8[a]	242.9
Mean	291.5[c]				237.4[b]		199.7[a]		
1963	404.0	382.0	378.0	367.0	318.0	390.0	302.0	362.0	362.8
Mean	393.0		372.5		354.0		332.0		
1964	375.4	412.6	301.7	392.1	290.2	303.6	290.8	255.1	327.7
Mean	394.0[a]		346.9[abc]		296.9[ed]		273.0[d]		
1965	430.4	427.4	418.4	449.0	191.1	336.5	173.6	189.9	327.0
Mean	428.9[a]		433.7[ab]		263.8[abc]		181.8[c]		

See Addendum for statistical procedures used to compute Duncan's Multiple Range Test.

response under each of the different rates of use. The included Addendum shows the computations used to determine statistical significance between production means by Duncan's Multiple Range Test.

Grazing rates and utilization of saltbush under the different intensities of use on the pastures are shown in Table 3. These computed data indicate a high variation which is due to a change of personnel which occurred during the early part of the clipping procedures in November and variations in intensities and procedures of clipping. In general, the slight use pastures appear to have been grazed below the desired 20%. This is probably not true for pasture 4a. The light use pastures also indicate use below normal in pasture 4b, but the average is very close to the 30% optimum rate. The moderate use pastures indicate a low rate of utilization which undoubtedly is inaccurate. The heavy use pastures also were affected by personnel change and subsequent variation. Data indicate the utilization rate to be only 69%.

TABLE 3. Sheep days per acre and percentage utilization under different intensities of grazing on the Dry Fork Halogeton Pastures. 1965.

	Sheep Days Per Acre	Percent Utilization of Saltbush
Slight Use-20%		
1958	9.51	6.5
1959	14.77	31.3
1960	7.79	11.6
1961	6.95	17.8
1962	14.63	28.6
1963	19.62	19.5
1964	17.06	20.4
1965	24.51	11.8
Mean	14.36	18.4
Light Use-30%		
1963	27.87	28.4
1964	23.30	22.1
1965	37.18	31.1
Mean	29.45	27.2
Moderate Use-40%		
1958	18.48	36.0
1959	30.47	54.0
1960	13.79	39.5
1961	12.31	30.4
1962	23.63	48.3
1963	35.37	38.4
1964	26.44	38.9
1965	30.14	22.2
Mean	23.83	38.5
Heavy Use-80%		
1958	34.50	54.6
1959	55.31	86.6
1960	16.82	74.1
1961	15.08	81.0
1962	37.13	71.4
1963	66.25	90.3
1964	52.75	78.2
1965	41.54	69.0
Mean	39.92	75.7

1965 Data
Individual Pastures

	4a	7a
SheepDays	24.60	24.42
Ave.	24.51	
Util.	6.45	17.19
Ave.	11.82	

	4b	7b
SheepDays	35.86	38.49
Ave.	37.18	
% Util.	24.50	37.69
Ave.	31.10	

	1	5
SheepDays	21.83	38.45
Ave.	30.14	
Util.	14.59	29.72
Ave.	22.16	

	2	6
SheepDays	39.68	43.40
Ave.	41.54	
Util.	54.83	83.23
Ave.	69.03	

The percent vegetative cover and percent composition of the saltbush (Tables 4 and 5) are in good agreement with the production data. There is a strong correlation between percent vegetative cover and yield in pounds per acre as is indicated in the 1964 report. Although percent vegetative cover tended to decrease on the slight use, light use and heavy use pastures and tended to increase on the moderate use pastures, these data do not indicate a significant change. The variation is undoubtedly due to the cool, wet spring in 1965 which tended to retard saltbush growth until late in the season.

TABLE 4. Percentage vegetative cover, under different intensities of grazing on the Dry Fork Halogeton Pastures. 1965.

	20% Slight Use		30% Light Use		40% Moderate Use		80% Heavy Use	
	4a	7a	4b	7b	1	5	2	6
ARSP	0	0	0	0.17	0.47	0.17	0	0.23
ARPE	0	0.07	0	0	0	0	0	0
ATNU	14.17	12.97	14.77	15.53	11.67	10.93	9.50	7.80
AGSM	0	0	0	0	0	0	0	0
ORHY	0	0	0	0	0.23	0	0.07	0.03
POSE	0	0	0	0.43	0	0.13	0	0.03
SIHY	0.20	1.07	0	0.90	0.30	2.53	0.33	1.87
ALTE	0.37	0.20	0.23	0.20	0.17	0.30	0.30	0.17
AST.spp.	0	0	0	0	0.13	0	0	0
DEPI	0	0	0	0	0	0	0	0
EUSE	0	0	0	0	0	0	0	0
GIPU	0	0	0	0	0	0	0	0
HAGL	0	0.20	0.17	0.03	0.23	0.07	1.73	2.63
KOSC	0	0.10	0	0	0	0	0	0
LARE	0.03	0	0	0	0	0	0	0
LEDE	0	0.03	0	0	0.07	0.10	0	0
MATA	0.13	0.06	0.33	0.30	0.43	0.67	0.03	0.67
MONU	0	0	0	0	0	0	0	0
MUDI	0	0	0	0	0	0	0	0
MUSTARD	0.03	0	0	0	0.03	0	0	0.07
OEAL	0	0	0	0	0.07	0	0	0
OPPO	0.07	0.07	0.37	0	0	0.17	0.07	0.10
SAKA	0.03	0.10	0	0	0.43	0	0	0.03
SIAL	0	0	0	0	0	0	0	0
SPCO	0	0	0	0	0	0	0	0.10
UNKNOWN	0	0	0	0	0.10	0	0	0
Pasture Total	15.03	14.87	15.87	17.56	14.33	15.07	12.03	13.73
Treatment Means	14.95		16.72		14.70		12.88	

Variations of importance are those with respect to halogeton and other annual weeds. These annual invader species are most abundant on the heavy use and moderate use pastures. The degree of importance that these have with respect to the total vegetation present can be noted by the differences in percentage composition of the vegetation under the different intensities of grazing as given in Table 5. Under the slight and light use grazing treatments saltbush comprised from 85 to 95 percent of all vegetation. On the moderate use pastures, this value has decreased to about 78%, while on the heavy use pasture saltbush contributes only from 60 to 78% or an average of 68%. Percent cover of saltbush is certainly correlated to annual precipitation. These data are shown in Table 6. Precipitation decreased approximately 2.2 inches in 1965 as compared to 1964. Percent cover of saltbush did not decrease significantly on the slight or light use

TABLE 5. Percentage composition under different intensities of grazing on Dry Fork Halogeton Pastures. 1965.

	20% Slight Use		30% Light Use		40% Moderate Use		80% Heavy Use	
	4a	7a	4b	7b	1	5	2	6
ARSP	0	0	0	0.95	3.22	1.17	0	1.78
ARPE	0	0.43	0	0	0	0	0	0
ATNU	94.44	84.02	93.07	88.43	80.46	76.40	78.73	59.39
AGSM	0	0	0	0	0	0	0	0
ORHY	0	0	0	0	1.61	0	0.55	0.25
POSE	0	0	0	2.47	0	0.93	0	0.25
SIHY	1.33	6.90	0	5.12	2.07	17.76	2.76	14.21
ALTE	2.45	1.30	1.47	1.14	1.15	2.10	2.49	1.27
AST.spp.	0	0	0	0	0.92	0	0	0
DEPI	0	0	0	0	0	0	0	0
EUSE	0	0	0	0	0	0	0	0
GIPU	0	0	0	0	0	0	0	0
HAGL	0	1.30	1.05	0.19	1.61	0.47	14.36	20.05
KOSC	0	0.65	0	0	0	0	0	0
LARE	0	0	0	0	0	0	0.28	0
LEDE	0	0.22	0	0	0.46	0.70	0	0
MATA	0.89	4.10	2.10	1.70	2.99	0.47	0.28	0.51
MONU	0	0	0	0	0	0	0	0
MUDI	0	0	0	0	0	0	0	0
MUSTARD	0.22	0	0	0	0.23	0	0	0.51
OEAL	0	0	0	0	0.46	0	0	0
OPPO	0.45	0.43	2.31	0	1.15	0	0.55	0.76
SAKA	0.22	0.65	0	0	2.99	0	0	0.26
SIAL	0	0	0	0	0	0	0	0
SPCO	0	0	0	0	0	0	0	0.76
UNKNOWN	0	0	0	0	0.68	0	0	0

TABLE 6. Annual precipitation and percent cover by pastures of Nuttall's saltbush under different intensities of utilization on the Dry Fork Halogeton Pastures. 1956-1965.

Year	Annual Precip. (Inches)	20% Slight Use		30% Light Use		40% Moderate Use		80% Heavy Use	
		4a	7a	4b	7b	1	5	2	6
1956	2.26	2.1	2.1			2.5	2.5	2.3	2.3
1957	5.93	13.4	11.9			11.6	10.4	7.0	6.8
1958		-	-			-	-	-	-
1959	5.62	-	-			-	-	-	-
1960	2.72	12.5	13.7			14.7	11.0	7.5	12.3
1961	4.15	-	-			-	-	-	-
1962	5.47	14.2	12.8			14.2	16.3	12.8	11.3
1963	7.15	18.0	18.9	18.9	20.5	17.0	20.5	14.9	12.8
1964	7.89	15.0	18.2	11.5	18.1	10.1	12.2	12.1	9.5
1965	5.63	15.0	13.0	14.8	15.5	11.7	10.9	9.5	7.8

pastures, and decreased only slightly on the moderate use. On the heavy use pastures, however, a very significant decrease was noted from an average of approximately 11% of cover of saltbush in 1964 to approximately 8% cover in 1965. This decrease is to be expected under the influence of the intensive grazing system. The saltbush plants in the heavy use pasture are smaller, younger, and have much less extensive root systems than those in the slight and light use pastures especially. The influence of grazing on saltbush first tends to break up the large stable clumps of saltbush and as these clumps break down, the root systems deteriorate as well. They are then much more susceptible to annual precipitation variation especially if precipitation decreases during the early spring growing season.

The relationship of halogeton plants to grazing intensity was determined by counting numbers of plants in the various pastures. This was accomplished by laying out a plot system over each pasture and counting the number of plants within each plot. Mean values by grazing treatments indicate that the slight and light use pastures have approximately two halogeton plants per square foot (Table 7). This value rose to about three plants per square foot in the moderate use pastures. Of great importance is the fact that number of halogeton plants per square foot on the heavy use pastures had risen to over 13. This is certainly a very significant increase and is a direct reflection of the effect of the grazing intensity upon the saltbush vegetation. Other annual weeds were more abundant on the heavier use pastures also.

TABLE 7. Numbers of halogeton plants per square foot by pasture on the Dry Fork Halogeton Pastures. 1965.

Rate of Utilization	Pasture Number	No. of Plots	Avg. No. of Plants/foot	Mean Plants Per Square Foot by rate of use
80% Heavy	2	50	13.4	
	6	50	13.3	13.3
40% Moderate	1	100	3.4	
	5	100	2.8	3.1
30% Light	4b	100	2.2	
	7b	100	2.5	2.4
20% Slight	4a	80	0.9	
	7a	100	2.5	1.7
Reserve	3	80	5.1	5.1

A D D E N D U M

Sheep Pasture - Production Data - 1965

Block	(1)	(2)	(2)	(1)	(2)	(1)	(1)	(2)
Percent use	40%		30%		20%		80%	
Pasture no.	1	5	4b	7b	4a	7a	2	6
	130.56	272.73	416.51	589.58	425.28	357.24	185.28	139.20
	297.60	291.93	406.90	251.10	278.40	753.02	170.88	135.36
	187.20	247.77	425.15	328.87	459.84	837.50	123.84	289.92
	237.12	287.12	448.18	470.54	430.08	413.06	188.16	281.28
	309.12	250.65	490.43	379.75	331.20	234.36	187.20	246.72
	129.60	464.73	277.36	1052.84	307.20	308.28	168.00	142.08
	168.00	722.09	401.20	274.15	387.84	251.64	230.40	208.32
	78.72	338.97	480.83	277.99	545.28	430.21	184.32	112.32
	203.52	250.65	418.32	427.75	381.12	451.33	118.08	114.24
	169.92	238.16	418.32	437.35	758.40	237.24	179.52	229.44
Pasture Totals	1911.36	3364.80	4183.20	4489.92	4304.64	4273.88	1735.68	1898.88

Treatment Totals $\sum X_{i00}$ 5276.16 8673.12 8578.52 3634.56

Grand Total $\sum X_{..00}$ 26,162.36

Block Totals $\sum_{i=1}^{5} X_{ij0}$ Block 1 = 12,410.84 Block 2 = 13,751.52

A D D E N D U M

Randomized Complete Block - Fixed Model, No Interaction - with Subsampling*

Source	d.f.	d.f.	Sum of Squares	Computed Sum of Squares	Calculated MS	Calculated F-values
Among Pastures	rt-1	7	$\frac{\sum_{ij} X_{ij.}^2}{s} - CT$	1,048,939.09		
Blocks	r-1	1	$\frac{\sum X_{.j.}^2}{ts} - CT$	22,467.79	22,467.79	<1 ns
Treatments	t-1	3	$\frac{\sum X_{i..}^2}{rs} - CT$	937,231.83	312,410.61	10.50*
Expt.Error	(r-1)(t-1)	3	Among Past SS - Block SS - Trt SS	89,239.47	29,746.49	
Sampling Error	rt(s-1)	72	Total SS-Among Past SS	1,423,538.35	19,771.37	
Total	rts-1	79		2,472,477.44		

Model: $X_{ijk} = \mu + \tau_i + \beta_j + \epsilon_{ij} + \delta_{ijk}$

where X_{ijk} is the kth observation in the jth block on the ith treatment
$i = 1,\ldots,t = 4$ treatments
$j = 1,\ldots,r = 2$ replications (blocks)
$k = 1,\ldots,s = 10$ observations

*Consult Steel and Torrie, 1960. Prin. & Proc. of Statistics, p. 143-144 for general form.

Tabled $F_{.95}$ with 3,3 d.f. = 9.28

A D D E N D U M

Computation of Sums of Squares:

Among Pastures SS = $\frac{\sum_{ij} X_{ij.}^2}{s} - \frac{x_{..}^2}{rts} = \frac{96,048,026.04}{10} - CT$

Among Past SS = 9,604,802.60 - 8,555,863.51 = 1,048,939.09

$CT = \frac{x_{..}^2}{rts} = \frac{684,469,080.77}{80} = 8,555,863.51$

Total SS = $\sum_{ijk} X_{ijk}^2 - CT$

then $\sum_{ijk} X_{ijk}^2$ by pastures:

Past 1	423,946.78
5	1,338,092.28
4b	1,780,258.35
7b	2,519,583.03
4a	2,027,029.71
7a	2,225,030.44
2	310,765.36
6	403,635.00
	11,028,340.95

Total SS = 11,028,340.95 - 8,555,863.51 = 2,472,477.44

Block SS = $\frac{\sum X_{.j.}^2}{ts} - CT = \frac{343,133,251.82}{40} - CT$

Block SS = 8,578,331.30 - 8,555,863.51 = 22,467.79

Treatment SS = $\frac{\sum X_{i..}^2}{rs} - CT = \frac{189,861,906.66}{20} - CT$

Treatment SS = 9,493,095.34 - 8,555,863.51 = 937,231.83

A D D E N D U M

Experimental Error SS = Among Past SS - Block SS - Treatment SS

Experimental Error SS = 1,048,939.09 - 22,467.79 - 937,231.83 = 89,239.47

Sampling Error SS = Total SS - Among Past SS

Sampling Error SS = 2,472,477.44 - 1,048,939.09 = 1,423,538.35

Application of Duncan's Multiple Range Procedure for the separation of mean differences (Steele and Torrie, p. 107-109).

Means not under-marked by same letter (a, b, c,) are declared significantly different.

Ranking of means (values in lbs/acre)

(trt. 2 - 30%)	(trt. 1 - 20%)	(trt. 3 - 40%)	(trt. 4 - 80%)
$\bar{X}_{\cdot 2}$ = 433.66	$\bar{X}_{\cdot 1}$ = 428.93	$\bar{X}_{\cdot 3}$ = 263.81	$\bar{X}_{\cdot 4}$ = 181.73
a	ab	abc	c

Duncans $s_{\bar{x}} = \sqrt{EMS/r}$ where r = number of observations making up each mean

$$s_{\bar{x}} = \sqrt{29,746.49/20} = \sqrt{1,487.32} = 38.57$$

.05 level with error d.f. = 3

Value of P	2	3	4
SSR	4.50	4.50	4.50
LSR = SSR * ($s_{\bar{x}}$)	173.57	173.57	173.57

$\bar{X}_{\cdot 2} - \bar{X}_{\cdot 4}$ = 433.66 - 181.73 = 251.93 > 173.57*

$\bar{X}_{\cdot 2} - \bar{X}_{\cdot 3}$ = 433.66 - 263.81 = 169.85 < 173.57 ns

$\bar{X}_{\cdot 2} - \bar{X}_{\cdot 1}$ = 433.66 - 428.93 = 4.73 < 173.57 ns

$\bar{X}_{\cdot 1} - \bar{X}_{\cdot 4}$ = 428.93 - 181.73 = 247.20 > 173.57*

$\bar{X}_{\cdot 1} - \bar{X}_{\cdot 3}$ = 428.93 - 263.81 = 165.12 < 173.57 ns

$\bar{X}_{\cdot 3} - \bar{X}_{\cdot 4}$ = 263.81 - 181.73 = 82.08 < 173.57 ns

SECTION II

STEER GRAZING STUDIES ON SALTBUSH RANGE AND SEEDED WATERSPREADERS (WORLAND)

PROGRESS REPORT 1965

H. G. Fisser

Introduction

The North Fork Experimental Pastures located on the North Fork of the 15-mile drainage (R94W, T48N, S30), were established in 1960 by cooperative agreement between the Bureau of Land Management and the Wyoming Agricultural Experiment Station. These pastures are located approximately 12 miles west of Worland, Wyoming, in an area dominated by Nuttall saltbush (*Atriplex nuttallii*).

Two pastures were established for comparison of animal and vegetation responses. One pasture, which consisted of 521.3 acres, was treated with waterspreaders and seeded to crested wheatgrass (*Agropyron cristatum*), tall wheatgrass (*Agropyron elongatum*), and annual kochia (*Kochia scoparia*). Seeding was conducted on approximately 190 acres of the spreader system in 1960. During the summer of 1963 it was found that a successful grass stand was established on 42 acres. The untreated check pasture consisted of 488.8 acres of native saltbush range. A map of the pastures with spreader dike and plot locations was presented in the 1963 report. During the first five years of the study yearling steers were furnished by the Wyoming Agricultural Substation at Powell, Wyoming. During the sixth year, 1965, steers, cows, calves, and bulls, were furnished from stock grazing in the area.

1965 Procedures

Intensive grazing with yearling steers was discontinued during the 1965 season. It place of the original grazing system, mixed livestock, that is, cows, calves, yearlings, long yearlings, and bulls were allowed to enter into the pastures from the animals grazing in the immediate vicinity. Stocking rate and associated animal data were collected by the Bureau of Land Management. Vegetation analyses of cover and composition were conducted by the point frame method. Permanent line transects 50' long which had been established in each pasture were read on June 10, 1965 by University personnel. In the treated pasture, analyses were conducted on three kinds of sites: (1) seeded areas adjacent to the dikes where a stand of grass was established, (2) unaffected areas of native saltbush range remote from the immediate dike area, and (3) interdike areas where the vegetation was destroyed during dike construction, but where seeded grasses failed to establish. In the native pasture the transects were established on typical saltbush range. Production and utilization estimates were not conducted during the 1965 season. The erosion transects which were established in 1963 were reread on June 10, 1965.

1965 Results

The cattle using the North Fork pasture were mixed and consisted of 17 cows, 13 animals older than yearlings, and 36 yearlings (33 heifers and 3 bulls). The livestock were put into the pastures beginning May 15, and removed on July 13. A total of 66 cattle and 6 calves were in the pastures. On June 18 the gates to the upper pasture (check or untreated) were opened and the cattle made intermittent use of the area until removal on July 13. Six calves were born while grazing the pastures. The listing of grazing days and numbers of cattle, with computations of animal unit months, are presented in Table 1.

Precipitation data in Table 2 show that total precipitation from the period October 15, 1964 through October 15, 1965, decreased about 0.8 inch from the value for the previous year. This decrease would not appear too significant except that the amount of precipitation recorded during the growth period from April 15, 1965, to October 15, 1965, was only 3.59 inches, a decrease of approximately 1.5 inches from the previous year. Observations indicated that flood irrigation and resulting grass production on the spreaders was less than in previous years.

The stocking rate as indicated in Table 1 resulted in heavy utilization but some ungrazed wolf plants were noted.

The 1965 vegetative analyses are presented in Table 3. Scientific and common names of plants listed by code letters are presented in Table 4.

Nuttall saltbush has proven to be stable under the grazing system imposed during the first five years of study with cover averaging approximately ten percent. During 1965 falsecarrot (*Musineon divaricatum*) became very abundant. This was probably a result of the cool moist weather during early spring. Most annual weeds were present in nominal abundance but surprisingly, since it had been relatively sparse during earlier years, halogeton (*Halogeton glomeratus*) was very dense on the interdike disturbed areas in which the seeded grasses were unable to establish.

Foliage cover of crested wheatgrass has remained relatively stable at approximately 25%. Tall wheatgrass, which decreased early in the grazing program, showed some increase during 1965. This again was probably due to the early spring weather characteristics.

The erosion transect data in Table 5 show that all sites apparently lost soil during the two year period from 1963 to 1965. This time period is insufficient for significant change and those noted may be due to differences in soil moisture content.

1966 Plans

Grazing will again be conducted by livestock from the immediate area. Vegetative analyses will be conducted. Use period may be modified if spring weather and forage growth so indicate. With normal conditions, however, the present productiveness of the seeded grasses does not indicate any major deterioration from the early spring grazing.

TABLE 1. Stocking rate, North Fork Experimental Pastures, 1965.

Date Stock Entered Pastures	Number Entered by Date	Cumulative Total Numbers	Date Removed	Days of Grazing	Animal Days
May 15	7	7	July 13	59	413
May 16	21	28	"	58	1218
May 18	29	57	"	56	1624
May 28	9	66	"	46	414
Total					3669

Mature stock - 3,669 animal days = 122.3 animal unit months

Calves - average of 9 calves per 57 days = 513 calf days

= 17.1 calf months

TABLE 2. Precipitation data (in inches) from University of Wyoming rain gauge, North Fork Experimental area. 1960 - 1965.

Precip. Periods	YEARS 1960	1961	1962	1963	1964	1965	Avg.	Percent of Total
Winter Oct. 15 - Apr. 15	--	1.85	1.13	1.19	1.28	2.02	1.49	22.4
Spring Apr. 15 - July 1	2.06	2.44	3.82	4.75	4.91	1.84	3.30	49.7
Summer July 1 - Sept. 1	0.93	0.34	1.32	0.53	.24	1.03	.73	11.0
Fall Sept. 1 - Oct. 15	1.42	2.75	0.60	1.19	.01	.72	1.12	16.9
TOTAL	--	7.38	6.87	8.66	6.44	5.61	6.64	100.0
Growth Period Total (Apr. 15 to Oct. 15)	4.41	5.53	5.74	6.47	5.16	3.59	5.15	

TABLE 3. Cover, composition, and frequency of North Fork Experimental area, 1965.

	Treated Pasture											
	Seeded Area			Interdike Disturbed Area			Undisturbed Native Range			Native Check Pasture		
	% Cover	% Comp.	% Freq.	% Cover	% Comp.	% Freq.	% Cover	% Comp.	% Freq.	% Cover	% Comp.	% Freq.
ATNU							9.04	82.48	32 00	11.52	83.99	39.50
ARCA	0.98	3.20	2.44									
ARSP										.02	.14	.25
ARTR	0.84	2.75	2.22									
AGCR	23.26	76.12	77.33	2.20	15.71	15.00						
AGEL	3.11	10.17	10.22									
ORHY	0.02	.06	.22	.40	2.86	2.00	.24	2.19	1.60	.10	.73	.50
POSE	0.07	.45	.67							.42	3.06	3.25
SCPA	0.16	.52	1.33									
SIHY	0.02	.06	.22	.40	2.86	4.00	.08	.73	.80	.02	.14	.25
ALTE	0.04	.13	.44	.20	1.43	2.00	.08	.73	.80	.32	2.33	2.50
AST	.02	.06	.22									
CHLA	.16	.52	1.33									
GIPU	.02	.06	.22									
HAGL				10.00	71.43	47.00				.08	.58	.75
LATE				.10	.71	1.00				.02	.14	.25
LEDE	.02	.06	.22									
LUPU										.02	.14	.25
MONU	.04	.13	.44									
MUDI	.33	1.08	2.67	.70	5.00	6.00	1.52	13.87	13.60	.90	6.56	7.00
OPPO										.30	2.19	2.00
PLPA	.02	.06	.22									
TAOF	.02	.06	.22									
TRDU	.02	.06	.22									
UNK	1.15	3.76	4.22									
VIAM	.04	.13	.22									
TOTAL	30.58			14.00			10.96			13.72		

TABLE 4. List of names and characteristics of plants. North Fork Experimental Pastures. 1965.

Code Name	Genus	Species	Common Name	Plant Form	Longevity
ATNU	Atriplex	nuttallii	Nuttall saltbush	Half shrub	Perennial
ARCA	Artemisia	lanulosa	Silver sagebrush	Shrub	Perennial
ARSP	Artemisia	spinescens	Bud sagebrush	Half shrub	Perennial
ARTR	Artemisia	tridentata	Big sagebrush	Shrub	Perennial
AGCR	Agropyron	cristatum	Crested wheatgrass	Grass	Perennial
AGEL	Agropyron	elongatum	Tall wheatgrass	Grass	Perennial
ORHY	Oryzopsis	hymenoides	Indian ricegrass	Grass	Perennial
POSE	Poa	secunda	Sandberg bluegrass	Grass	Perennial
SCPA	Schedonnardus	paniculatus	Tumblegrass	Grass	Perennial
SIHY	Sitanion	hystrix	Bottlebrush squirreltail	Grass	Perennial
ALTE	Allium	textile	Textile onion	Forb	Perennial
AST	Astragalus spp.		Milkvetch	Forb	Perennial
CHLA	Chenopodium	lanceolatum	Lambsquarter goosefoot	Forb	Annual
GIPU	Gilia	pumula	Gilia	Forb	Annual
HAGL	Halogeton	glomeratus	Halogeton	Forb	Annual
LATE	Lapula	texana	Stickseed	Forb	Annual
LEDE	Lepidium	densiflorum	Prairie pepperweed	Forb	Annual
LUPU	Lupinus	pusillus	Rusty lupine	Forb	Annual
MONU	Monolepis	nuttalliana	Nuttall monolepis	Forb	Annual
MUDI	Musineon	divaricatum	Falsecarrot	Forb	Perennial
OPPO	Opuntia	polyacantha	Plains pricklypear	Forb	Perennial
PLPA	Plantago	patagonica	Wooly Indianwheat	Forb	Annual
TAOF	Taraxacum	officinale	Common dandelion	Forb	Perennial
TRDU	Tragopogon	dubins	Salsify	Forb	Perennial
VIAM	Vicia	americana	American vetch	Forb	Perennial

TABLE 5. Changes in soil surface level (measured in centimeters) under erosion transects 1963 - 1965. North Fork Experimental Pastures.

	Transect Number					
	1	2	3	4	5	Mean
Native Pasture						
Ridgetop Site	-1.99	-2.41	-0.24	-0.89	-1.50	-1.25
Gully Site	-1.25	-0.13	-2.12	+0.53	-0.07	-0.61
Saltbush Site	+0.32	-1.10	-0.91	-0.53	-0.44	-0.53
Treated Pasture						
Bare Disturbed Site	+0.05	-0.73	-2.02	-1.26	-0.46	-0.88
Seeded Site	-0.35	-1.03	-0.30	-2.24	-0.61	-0.91
Saltbush Site	-0.31	-0.91	-0.99	-0.18	-0.15	-0.51

(+) indicates a buildup of the soil level

(-) indicates a lowering of the soil level

SECTION III

EXCLOSURE STUDIES (PRODUCTION, COVER, HEIGHT AND PRECIPITATION PHASE) 1965

Vegetation production studies on exclosures and relic areas of the Big Horn and Wind River Basins were initiated during the 1962 field season. Most of the exclosures were constructed in 1959 and 1960. The objectives of the program were to determine:

1. the relationship of annual herbage production to area cover percentage;
2. the relationship of annual herbage production changes to variations in time and amount of available moisture;
3. the relationship of plant height of major forage species to annual herbage production and to time and amount of available moisture;
4. the influence of several range improvement practices on herbage production, area cover, and plant height;
5. the relationship of percentage frequency to area cover and herbage production.

Methods and Procedures

Area cover, herbage production, and height data studies on sagebrush-grass sites were conducted on transects of 20 quadrats, 1' x 1', spaced systematically along a randomly located 100 ft. steel tape. On sites dominated by saltsage, data were obtained in like manner except that plot size was 1' x 10'. The plot frame was placed at right angles to the steel tape and vegetation data were subdivided into ten subplots.

Area cover of herbaceous and low growing semi-woody species was estimated within each square foot plot. Shrub crown cover, including that of prickly-pear cactus and phlox, was estimated within the square foot plots, but these data were not combined when comparing area cover to forage production.

Forage production was determined by clipping herbaceous species at ground or crown level. Exclosures were clipped on or near the same date as the previous years. Clippings were oven-dried at 70°C for 24 hours prior to weighing.

Leaf height data were recorded only for the more important species. These were measured on a metric basis and will be correlated with weight and precipitation data in future years.

Precipitation data were recorded from simple aluminum rain gauges installed at each exclosure. Precipitation data were recorded four times a year - April 15, July 1, September 1, and October 15.

Metal stakes were driven into the ground for permanent photo location points in the area where production studies are being conducted in each exclosure.

Names of plants which occurred in the production study areas are shown in Table 1. Included are the four letter code names by which the plants are identified in the tabular material; genus, species, and common names, and life form and characteristic longevity of the plants.

1965 Results

A list, by counties, of production study areas was presented in the report of 1964 data. General locations of exclosures were shown on maps in the same report. The tabular data of production, cover, height, frequency, and precipitation are arranged alphabetically by exclosure or study area name.

Production clipping in 1965 was conducted both inside and outside the exclosures and study areas to determine the influence of grazing upon the vegetation during the four previous years. In some instances significant variations in production were noted outside the exclosures as compared to inside. Some areas however, showed very little difference. At the exclosures where sagebrush had been controlled, response of understory vegetation to the procedure was easily visible both inside and outside. Production values were lower in the grazed areas but was greater on the sprayed sites than on the non-sprayed.

The influence of the cool moist spring of 1965, which retarded rate of plant growth, was evident in the production values of many areas. Sandberg bluegrass production values, and other early maturing species also, were above normal since they had not reached the stage of deterioration normally expected at the clipping dates. The later maturing plants, wheatgrasses especially, were often in a comparably early stage of growth.

TABLE I. LIST OF PLANT NAMES WHICH OCCURRED IN PRODUCTION STUDY AREAS

Code	Genus - Species	Common	Life Form	Longevity
ACLA	Achillea lanulosa	Yarrow	Forb	Perennial
AGCR	Agropyron cristatum	Crested wheatgrass	Grass	Perennial
AGEL	Agropyron elongatum	Tall wheatgrass	Grass	Perennial
AGEX	Agrostis exarata	Spikebent	Grass	Perennial
AGR	Agropyron spp.	Wheatgrasses	Grass	Perennial
AGSM	Agropyron smithii	Western wheatgrass	Grass	Perennial
AGSP	Agropyron spicatum	Bluebunch wheatgrass	Grass	Perennial
ALTE	Allium textile	Textile onion	Forb	Perennial
ANRO	Antennaria rosea	Rose pusseytoes	Forb	Perennial
ARA	Arabis spp.	Rockcresses	Forb	Perennial
ARE	Arenaria spp.	Sandworts	Forb	Perennial
ARFR	Artemisia frigida	Fringed sagewort	Half-shrub	Perennial
ARFU	Arnica fulgens	Orange arnica	Forb	Perennial
ARNO	Artemisia nova	Black sagebrush	Shrub	Perennial
ARPE	Artemisia pedatifida	Brown sagebrush	Half-shrub	Perennial
ARSP	Artemisia spinescens	Bud sagebrush	Half-shrub	Perennial
ARTR	Artemisia tridentata	Big sagebrush	Shrub	Perennial
AST	Astragalus spp.	Milkvetches	Forb	
ASTE	Aster spp.	Asters	Forb	
ATAR	Atriplex argentea	Silverscale saltbush	Forb	Annual
ATNU	Atriplex nuttallii	Nuttall saltbush	Half-shrub	Perennial
BOGR	Bouteloua gracilis	Blue grama	Grass	Perennial
BRJA	Bromus japonicus	Japanese chess	Grass	Annual
BRTE	Bromus tectorum	Cheatgrass brome	Grass	Annual
CAEL	Carex eleocharis	Needleleaf sedge	Sedge	Perennial
CAFI	Carex filifolia	Threadleaf sedge	Sedge	Perennial
CAMI	Camelina microcarpa	Littlepod falseflax	Forb	Annual
CANU	Calochortus nuttallii	Mariposa lily	Forb	Perennial
CAR	Carex spp.	Sedges	Sedge	Perennial
CAS	Castilleja spp.	Paintbrushes	Forb	Perennial
CEAR	Cerastium arvense	Field chickweed	Forb	Perennial
CHAL	Chenopodium album	Lambsquarter goosefoot	Forb	Annual
CHNA	Chrysothamnus nauseosus	Rubber rabbitbrush	Shrub	Perennial
CHVI	Chrysothamnus viscidiflorus	Green rabbitbrush	Shrub	Perennial
COPA	Commandra pallida	False toadflax	Forb	Perennial
CORA	Cordylanthus ramosus	Branched birdbeak	Forb	Annual
CRAC	Crepis acuminatus	Tapertip hawksbeard	Forb	Perennial
DAUN	Danthonia unispicata	One-spike oatgrass	Grass	Perennial
DEBI	Delphinium bicolor	Low larkspur	Forb	Perennial
DEPI	Descurainia pinnata	Pinnate tansymustard	Forb	Annual
ERCE	Eriogonum cernuum	Nodding eriogonum	Forb	Annual
ERI	Erigeron spp.	Fleabanes	Forb	Perennial
ERIO	Eriogonum spp.	Eriogonums	Forb	
EROV	Eriogonum ovalifolium	Cushion eriogonum	Forb	Perennial
ERPU	Erigeron pumilus	Fleabane	Forb	Perennial
ERSU	Eriogonum subalpinum	Subalpine eriogonum	Forb	Perennial
EULA	Eurotia lanata	Winterfat	Half-shrub	Perennial
EUSE	Euphorbia serphyllifolia	Thyme-leaved spurge	Forb	Annual

TABLE I. LIST OF PLANT NAMES WHICH OCCURRED IN PRODUCTION STUDY AREAS
(Continued)

Code	Genus - Species	Common	Life Form	Longevity
FEID	Festuca idahoensis	Idaho fescue	Grass	Perennial
FEOC	Festuca octoflora	Sixweeks fescue	Grass	Annual
FROV	Fragaria ovalis	Wild strawberry	Forb	Perennial
GIPU	Gilia pumila	Gilia	Forb	Annual
GRSQ	Grindelia squarrosa	Curlycup gumweed	Forb	Biennial
GUSA	Gutierrezia sarothrae	Broom snakeweed	Half-shrub	Perennial
HAGL	Halogeton glomeratus	Halogeton	Forb	Annual
HEPE	Helianthus petiolaris	Prairie sunflower	Forb	Annual
HOPU	Hordeum pusillum	Little barley	Grass	Annual
HYAC	Hymenoxys acaulis	Stemless hymenoxys	Forb	Perennial
IRMI	Iris missouriensis	Rocky Mountain iris	Forb	Perennial
JUOS	Juniperus osteosperma	Utah juniper	Tree	Perennial
JUSC	Juniperus scopulorum	Rocky Mountain juniper	Tree	Perennial
KOCR	Koeleria cristata	Junegrass	Grass	Perennial
KOSC	Kochia scoparia	Annual kochia	Forb	Annual
LAC	Lactuca spp.	Lettuce	Forb	Annual
LARE	Lappula redowskii	Stickseed	Forb	Annual
LATE	Lappula texana	Stickseed	Forb	Annual
LEDE	Lepidium densiflorum	Prairie pepperweed	Forb	Annual
LEPE	Lepidium perfoliatum	Clasping pepperweed	Forb	Annual
LEPU	Leptodactylon pungens	Granite gilia	Forb	Perennial
LERE	Lewisia rediviva	Bitterroot	Forb	Perennial
LES	Lesquerella spp.	Bladderpods	Forb	Perennial
LILE	Linum lewisii	Blue flax	Forb	Perennial
LUP	Lupinus spp.	Lupines	Forb	
MAGL	Machaeranthera glabriuscula	Woody aster	Half-shrub	Perennial
MATA	Machaeranthera tanacetifolia	Tansyleaf aster	Forb	Annual
MER	Mertensia spp.	Bluebells	Forb	Perennial
MONU	Monolepis nuttalliana	Nuttall monolepis	Forb	Annual
MUDI	Musineon divaricatum	Falsecarrot	Forb	Perennial
MUSQ	Munroa squarrosa	False buffalograss	Grass	Annual
OEAL	Oenothera albicaulis	Pale eveningprimrose	Forb	Perennial
OEN	Oenothera spp.	Evening primrose	Forb	
OPPO	Opuntia polyacantha	Plains pricklypear	Forb	Perennial
ORHY	Oryzopsis hymenoides	Indian ricegrass	Grass	Perennial
PEN	Penstemon spp.	Penstemons	Forb	Perennial
PERA	Penstemon radicosus	Matroot penstemon	Forb	Perennial
PHHO	Phlox hoodii	Hood's phlox	Forb	Perennial
PHL	Phleum spp.	Timothys	Grass	Perennial
PIFL	Pinus flexilis	Limber pine	Tree	Perennial
PLPA	Plantago patagonica	Wooly Indianwheat	Forb	Annual
PLSP	Plantago spinescens	Spiny Indianwheat	Forb	Annual
POA	Poa spp.	Bluegrasses	Grass	Perennial
POCO	Potentilla concinna	Elegant cinquefoil	Forb	Perennial
POFE	Poa fendleriana	Muttongrass	Grass	Perennial
POSE	Poa secunda	Sandberg bluegrass	Grass	Perennial

TABLE I. LIST OF PLANT NAMES WHICH OCCURRED IN PRODUCTION STUDY AREAS
(Continued)

Code	Genus - Species	Common	Life Form	Longevity
SAKA	Salsola kali	Russian thistle	Forb	Annual
SAVE	Sarcobatus vermiculatus	Greasewood	Shrub	Perennial
SECA	Senecio canus	Wooly grounsel	Forb	Perennial
SEDE	Selaginella densa	Clubmoss	Clubmoss	Perennial
SIAL	Sisymbrium altissimum	Tumblemustard	Forb	Annual
SIHY	Sitanion hystrix	Squirreltail bottlebrush	Grass	Perennial
SIS	Sisymbrium spp.	Tumblemustards	Forb	
SPAI	Sporobolus airoides	Alkali sacaton	Grass	Perennial
SPCO	Sphaeralcea coccinea	Scarlet globemallow	Forb	Perennial
SPCR	Sporobolus cryptandrus	Sand dropseed	Grass	Perennial
STCO	Stipa comata	Needleandthread	Grass	Perennial
STVI	Stipa viridula	Green needlegrass	Grass	Perennial
TAR	Taraxacum spp.	Dandelions	Forb	Perennial
TECA	Tetradymia canescens	Gray horsebrush	Shrub	Perennail
TRDU	Tragopogon dubius	Salsify	Forb	Biennial
TRI	Trifolium spp.	Clovers	Forb	
UNK	Unknown forbs		Forb	
UTR	Utrica spp.	Nettles	Forb	
VIAM	Vicia americana	American vetch	Forb	Perennial
VINU	Viola nuttallii	Nuttall violet	Forb	Perennial
ZYG	Zygadenus spp.	Death camas	Forb	Perennial

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Ant Eradication Exc. (Riverton) Inside Native 8/27/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \div E$	Wgt./ Unit Basal Area $F \div A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	153	7.65	--		10				
AGSM	36	1.80	48.78		20	25.54	1.28	0.71	122.59
POSE	16	0.80	21.68		12	2.79	0.23	0.17	13.39
ORHY	6	0.30	8.13		2	3.46	1.73	0.58	16.61
STCO	11	0.65	14.91		4	5.83	1.46	0.53	27.98
CAEL	2	0.10	2.71		4	0.38	0.10	0.19	1.82
Ann. Forbs.	1				2	0.26	0.13	0.26	1.25
PLPA	0.5	0.03	0.81		1				
ERCE	0.5	0.03	0.81		1				
Per. Forbs.	1.5				3	0.05	0.02	0.03	0.24
SPCO	1.5	0.08	2.17		3				
*PHHO	3	0.15			2				
OPPO	159	7.95	--		6				
TOTAL		3.69	100.00			38.31			183.88

*Not computed in percent composition

Precipitation Data

R. G. # 5 Ant Eradication Exc. (Riverton)

October 15 to April 15	- 2.22
April 15 to July 1	- 3.15
July 1 to September 1	- 1.07
September 1 to October 15	- 1.36
Season Total	- 7.80
Long Term Average	- 7.93

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Ant Eradication Exc. (Riverton) Outside Native 8/27/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	135	6.75	--		11				
AGSM	16.5	.83	15.68		14	9.37	67	.57	44.98
POSE	19.5	.98	18.53		12	2.71	.23	.14	13.01
BOGR	61	3.05	57.65		5	10.46	2.09	.17	50.21
STCO	6	.30	5.67		4	1.80	.45	.30	8.64
Ann. Forbs	2				2	.06	.03	.03	.29
PLPA	1	.05	.95		2				
LEDE	1	.05	.95		2				
Per. Forbs	.5				1	.01	.01	.02	.05
SPCO	.5	.03	.57		1				
*PHHO	2	.10	--		1				
*OPPO	100	5.00	--		6				
TOTAL		5.29	100.00			24.41			117.18

*Not computed in percent composition

Precipitation Data

R. G. # 5 Ant Eradication Exc. (Riverton)

October 15 to April 15	-	2.22
April 15 to July 1	-	3.15
July 1 to September 1	-	1.07
September 1 to October 15	-	1.36
Season Total	-	7.80
Long Term Average	-	7.93

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Bud Kimball Inside Non-sprayed Native 7/27/65	Total Trans Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	198	9.90	--		12				
POSE	72.5	3.63	73.77		17	24.27	1.43	0.33	116.50
AGSM	14	0.70	14.23		14	14.45	1.03	1.03	69.36
Ann.Forbs	10.5				11	3.17	0.29	0.30	15.22
PLSP	9.5	0.48	9.76		11				
LEDE	0.5	0.03	0.61		1				
LATE	0.5	0.03	0.61		1				
Per.Forbs	1				2	0.14	0.07	0.14	0.67
MUDI	1	0.05	1.02		2				
*PHHO	4	0.20	--		2				
*OPPO	10	0.50	--		2				
TOTAL		4.92	100.00			42.03			201.75

*Not computed in percent composition

Precipitation Data:

R. G. #41 Bud Kimball Exclosure

October 15 to April 15	- 2.61
April 15 to July 1	- 3.04
July 1 to September 1	- 0.64
September 1 to October 15	- 1.16
Season Total	- 7.45
Long Term Average	- 9.75

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Bud Kimball Inside Sprayed 7/27/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight PerPlot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*AGSM	45	2.25	29.93		20	55.65	2.78	1.24	267.12
POSE	88.5	4.43	58.89		19	28.05	1.48	0.32	134.64
STHY	1	0.05	0.67		1	0.19	0.19	0.19	0.91
Ann.Forbs	15.5				13	1.74	0.13	0.11	8.35
PLSP	6.5	0.33	4.39		10				
LARE	1	0.05	0.67		2				
LEDE	2	0.10	1.33		4				
UNK.#1	5.5	0.28	3.72		10				
LATE	0.5	0.03	0.40		1				
*PHHO	3	0.15	--		2				
*OPPO	24	1.20	--		4				
TOTAL		7.52	100.00			85.63			411.02

*Not computed in percent composition

Precipitation Data

R. G. #41 Bud Kimball Exclosure

October 15 to April 15	- 2.61
April 15 to July 1	- 3.04
July 1 to September 1	- 0.64
September 1 to October 15	- 1.16
Season Total	- 7.45
Long Term Average	- 9.75

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Bud Kimball Outside Sprayed 7/27/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F.x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	3	0.15	--		1				
AGSM	37	1.85	20.15		19	18.75	0.99	0.51	90.00
POSE	65	3.25	35.39		19	9.38	0.49	0.14	45.02
Ann.Forbs	81.5				20	29.49	1.47	0.36	141.55
PLSP	78	3.90	42.50		20				
LATE	0.5	0.03	0.33		1				
UNK.#1	3	0.15	1.63		4				
*PHHO	1	0.05	--		1				
*OPPO	3	0.15	--		1				
TOTAL		9.18	100.00			57.62			276.57

*Not computed in percent composition

Precipitation Data

R. G. # 41 Bud Kimball Exclosure

October 15 to April 15	- 2.61
April 15 to July 1	- 3.04
July 1 to September 1	- 0.64
September 1 to October 15	- 1.16
Season Total	- 7.45
Long Term Average	- 9.75

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Bud Kimball Outside Non-sprayed Native 7/27/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	22	1.10	--		2				
AGSM	23.50	1.18	22.96		20	15.31	0.76	0.65	73.49
POSE	64	3.20	62.25		20	10.84	0.54	0.17	52.03
Ann.Forb	15				11	4.98	0.45	0.33	23.90
PLSP	13	0.65	12.65		11				
LEDE	1.5	0.08	1.56		3				
UNK.#1	0.5	0.03	0.58		1				
*OPPO	16	0.80	--		4				
TOTAL		5.14	100.00			31.13			149.42

*Not computed in percent composition

Precipitation Data

R. G. #41 Bud Kimball Exclosure

October 15 to April 15	- 2.61
April 15 to July 1	- 3.04
July 1 to September 1	- 0.64
September 1 to October 15	- 1.16
Season Total	- 7.45
Long Term Average	- 9.75

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Buffalo Creek Inside 7/31/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	66.5	3.33	--		5				
AGSP	57.5	2.88	51.78		20	74.93	3.75	1.30	359.66
POSE	21.5	1.08	19.43		18	5.86	.33	.27	28.13
BOGR	20	1.00	17.99		3	5.23	1.83	.26	25.10
BRTE	0.5	.03	.54		1	.05	.05	.10	.24
Ann.Forbs	8				15	1.34		.17	6.43
CHAL	0.5	.03	.54		1				
PLPA	7.5	.38	6.84		15				
Per.Forbs	3				6	1.65	.28	.55	7.92
MACA	1	.05	.90		2				
TRI.	1	.05	.90		2				
SPCO	0.5	.03	.54		1				
ALTE	0.5	.03	.54		1				
*PHHO	15	.75	--		7				
*OPPO	37	1.85	--		3				
TOTAL		5.56	100.00			89.06			427.48

*Not computed in percent composition

Precipitation Data

R. G. # 7 Buffalo Creek Exclosure

October 15 to April 15	- 3.40
April 15 to July 1	- 3.54
July 1 to September 1	- 1.73
September 1 to October 15	- 1.54
Season Total	- 10.21
Long Term Average	- 10.55

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Buffalo Creek Outside 7/31/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
[illegible]TR	78	3.90	--		9				
AGSP	0.5	0.03	0.57		1	0.19	0.19	.38	.91
AGSM	26	1.30	24.53		20	51.78	2.59	1.99	248.54
POSE	41.5	2.08	39.21		20	8.13	.41	.20	39.02
BRTE	3.5	0.18	3.40		7	0.75	.11	.21	3.60
KOCR	0.5	0.03	0.57		1	0.17	.17	.34	.82
BOGR	17	0.85	16.04		1	6.17	6.17	.36	29.62
Ann.Forbs	8.3	--	--		17	3.81	.23	.47	18.58
UNK.	0.5	0.03	0.57		1				
PLPA	.8	0.40	7.55		16				
SAKA	4.5	0.23	4.34		9				
CHAL	0.5	0.03	0.57		1				
LEDE	1	0.05	0.94		2				
AST	0.5	0.03	0.57		1				
LARE	0.5	0.03	0.57		1				
Per.Forbs	0.5				1	.10	.10	.20	.48
[illegible]TE	0.5	0.03	0.57		1				
*OPPO	44	2.20	--		5				
TOTAL		5.30	100.00			71.16			341.57

*Not computed in percent composition

Precipitation Data

R. G. # 7 Buffalo Creek Exclosure

October 15 to April 15	- 3.40
April 15 to July 1	- 3.54
July 1 to September 1	- 1.73
September 1 to October 15	- 1.54
Season Total	- 10.21
Long Term Average	- 10.55

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 — No. Plots 20

Cover Determined by Area Estimate

Burnt Wagon Exclosure Inside 7/12/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{\div}{\div} E$	Wgt./ Unit Basal Area $F \frac{\div}{\div} A$	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	691.5	3.46	92.76		64	322.41	5.04	.47	154.76
SIHY	18.5	.09	2.41		9	18.40	2.04	.99	8.83
POSE	1	.01	.27		1	.04	.04	.04	.02
Per. Forbs	33				62	6.89	.11	.21	3.31
MUDI	27.5	.14	3.75		53				
ALTE	5.5	.03	.81						
TOTAL		3.73	100.00			347.74			166.92

Precipitation Data

R. G. # 17 Burnt Wagon Exclosure

October 15 to April 15	- 1.92
April 15 to July 1	- 2.00
July 1 to September 1	- .91
September 1 to October 15	- .67
Season Total	- 5.50
Long Term Average	- 6.17

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 — No. Plots 20

Cover Determined by Area Estimate

Burnt Wagon Exclosure Outside 7/12/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	718.5	3.59	87.99		89	349.84	3.93	.49	167.92
ARSP	20	.10	2.45		1	19.36	19.36	.97	9.29
SIHY	26.5	.13	3.18		13	32.83	2.53	1.24	15.76
Ann.Forbs	2				3	.85	.28	.43	.41
MATA	1	.01	.25		2				
UNK.	1	.01	.25		1				
Per.Forbs	46.5				75	18.07	.24	.39	8.67
MUDI	35.5	.18	4.41		65				
ALTE	5.5	.03	.73		10				
OEN	1.5	.01	.25		3				
ASTE	4	.02	.49		2				
*OPPO	10	.05	--		2				
TOTAL		4.08	100.00			420.95			202.05

*Not computed in percent composition

Precipitation Data

R. G. # 17 Burnt Wagon Exclosure

October 15 to April 15	- 1.92
April 15 to July 1	- 2.00
July 1 to September 1	- .91
September 1 to October 15	- .67
Season Total	- 5.50
Long Term Average	- 6.17

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Boysen Reservoir Inside 8/2/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
BOGR	70	3.50	73.53		16	24.12	1.51	0.34	115.78
SPCR	16.5	0.83	17.44		5	8.15	1.63	0.49	39.12
Ann. Forbs	3.5				7	0.07	0.01	0.02	0.34
MATA	0.5	0.03	0.63		1				
UNK.	1	0.05	1.05		2				
AST.	2	0.10	2.10		4				
Per. Forbs	5				10	4.44	0.44	0.89	21.31
SPCO	5	0.25	5.25		10				
*OPPO	4	0.20	--		2				
TOTAL		4.76	100.00			36.78			176.55

*Not computed in percent composition

Precipitation Data

R. G. #10 - Boysen Reservoir Exclosure

October 15 to April 15	- 0.36
April 15 to July 1	- 1.90
July 1 to September 1	- 1.01
September 1 to October 15	- 0.55
Season Total	- 3.82
Long Term Average	- 4.60

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Boysen Reservoir Exclosure Outside 8/2/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
ATNU	1.5	0.08	1.74		2	0.90	0.45	0.60	4.32
OGR	63.5	3.18	68.97		16	9.81	0.61	0.15	47.09
SPCR	15.5	0.78	16.92		9	2.41	0.27	0.16	11.57
Ann.Forbs	9.5				17	6.38	0.38	0.67	30.62
HAGL	8.0	0.40	8.68		15				
TRI.	0.5	0.03	0.65		1				
SAKA	0.5	0.03	0.65		1				
AST.	0.5	0.03	0.65		1				
Per.Forbs	1.5				3	0.91	0.30	0.61	4.37
SPCO	1.5	0.08	1.74		3				
*OPPO	35	1.75	--		5				
TOTAL		4.61	100.00			20.41			97.97

*Not computed in percent composition

Precipitation Data

R. G. #10 - Boysen Reservoir Exclosure

October 15 to April 15	- 0.36
April 15 to July 1	- 1.90
July 1 to September 1	- 1.01
September 1 to October 15	- 0.55
Season Total	- 3.82
Long Term Average	- 4.60

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Inside Non-Spray (Native) 7/30/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{G}{F} E$	Wgt./ Unit Basal Area $F \frac{G}{F} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	40?	20.35	--		10				
AGSM	28	1.40	29.34		20	47.00	2.35	1.68	225.60
POSE	48.5	2.43	50.94		18	9.20	.51	.19	44.16
BRTE	1.5	08	1.68		3	.06	.02	.04	.29
STCO	3	.15	3.14		1	2.30	2.30	.77	11.04
Ann. Forbs	11.5				17	1.12	.07	.10	5.38
PLSP	7	.35	7.34		14				
CHAL	1	.05	1.05		2				
CORA	1.5	.08	1.68		3				
DEPI	1	.05	1.05		2				
LEDE	1	.05	1.05		2				
Per. Forbs	2.5				4	.77	.19	.31	3.70
LERE	.5	.03	.63		1				
ALTE	2	.10	2.10		4				
PHHO	7.5	.38	--		2				
*OPPO	28	1.40	--		2				
TOTAL		4.77	100.00			60.45			290.17

*Not computed in percent composition

Precipitation Data

R. G. # 76 Cochran Exclosure

October 15 to April 15	- 3.51
April 15 to July 1	- 3.84
July 1 to September 1	- 1.38
September 1 to October 15	- 1.63
Season Total	- 10.36
Long Term Average	- 10.98

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Inside Sprayed 7/30/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	129.5	6.48	--		13				
BOGR	12	0.60	10.97		1	2.90	2.90	0.24	13.92
AGSM	34.5	1.73	31.62		20	58.83	2.94	1.71	282.38
POSE	38.5	1.93	35.30		19	12.23	0.64	0.32	58.70
BRTE	6.5	0.33	6.03		11	0.78	0.07	0.12	3.74
FEOC	1	0.05	0.91		2	0.06	0.03	0.06	0.29
Ann.Forbs	15.5				16	3.88	0.24	0.25	18.62
LEDE	3	0.15	2.74		6				
PLSP	10	0.50	9.14		16				
LARE	0.5	0.03	0.55		1				
CORA	2	0.10	1.83		4				
Per.Forbs	1				2	0.80	0.40	0.80	3.84
ALTE	1	0.05	0.91		2				
*OPPO	2	0.10	--		1				
TOTAL		5.47	100.00			79.48			381.49

*Not computed in percent composition

Precipitation Data

R. G. #76 - Cochran Exclosure

October 15 to April 15	- 3.51
April 15 to July 1	- 3.84
July 1 to September 1	- 1.38
September 1 to October 15	- 1.63
Season Total	- 10.36
Long Term Average	- 10.98

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Outside Native 7/30/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt/ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	265.5	13.28	--		10				
AGSM	18.5	0.93	21.33		20	20.56	1.03	1.11	98.69
POSE	44.5	2.23	51.13		20	8.19	0.41	0.18	39.31
BRTE	3	0.15	3.44		6	0.42	0.07	0.14	2.02
Ann.Forbs	19.5				18	9.85	0.55	0.51	47.28
PLSP	12.5	0.63	14.45		16				
LEDE	3.5	0.18	4.13		7				
LARE	1	0.05	1.15		2				
CAMI	0.5	0.03	0.69		1				
CHAL	1.5	0.08	1.84		3				
CORA	0.5	0.03	0.69		1				
Per.Forbs	1				2	0.34	0.17	0.34	1.63
SPCO	1	0.05	1.15		2				
*PHHO	4	0.20	--		1				
*OPPO	10	0.50	--		1				
TOTAL		4.36	100.00			39.36			188.93

*Not computed in percent composition

Precipitation Data

R. G. #76 - Cochran Exclosure

October 15 to April 15	- 3.51
April 15 to July 1	- 3.84
July 1 to September 1	- 1.38
September 1 to October 15	- 1.63
Season Total	- 10.36
Long Term Average	- 10.98

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Outside Sprayed 7/30/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{G}{E}$	Wgt./ Unit Basal Area F $\frac{G}{H}$ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	.5	.03	--		1				
AGSM	26	1.30	20.54		20	32.60	1.63	1.25	156.48
POSE	38.5	1.93	30.50		20	7.73	.39	.20	37.10
BRTE	21.5	1.08	17.06		20	23.17	1.16	1.08	111.22
BOGR	14	.70	11.06		2	2.16	1.08	.15	10.37
FEOC	1	.05	.79		2	.09	.05	.09	.43
Ann.Forbs	22.5				20	13.77	.69	.61	66.10
PLSP	12.5	.63	9.95		18				
CHAL	3	.15	2.37		6				
LEDE	3.5	.18	2.84		7				
CORA	2	.10	1.58		4				
LARE	1.5	.08	1.26		3				
Per.Forbs	2.5				3	.24	.08	.10	1.15
LERE	1	.05	.79		2				
ALTE	1.5	.08	1.26		3				
*PHHO	2	.10	--		1				
*OPPO	4.5	.23	--		2				
TOTAL		6.33	100.00			79.76			382 85

*Not computed in percent composition

Precipitation Data

R. G. # 76 Cochran Exclosure

October 15 to April 15	- 3.51
April 15 to July 1	- 3.84
July 1 to September 1	- 1.38
September 1 to October 15	- 1.63
Season Total	- 10.36
Long Term Average	- 10.98

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Cochran Cultivated 8/19/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	242	12.10	--		9				
AGSM	47	2.35	39.70		19	46.17	2.43	0.98	221.62
POSE	34	1.70	28.71		19	7.40	0.39	0.22	35.52
STCO	1	0.05	0.84		1	0.10	0.10	0.10	0.48
FEOC	0.5	0.03	0.51		1	0.02	0.02	0.04	0.10
BRTE	10.5	0.53	8.95		11	4.00	0.36	0.38	19.20
Ann.Forbs	24.5				19	2.55	0.13	0.10	12.24
CHAL	2	0.10	1.69		4				
PLSP	20.5	1.02	17.23		18				
LEDE	1.5	0.08	1.35		3				
LATE	0.5	0.03	0.51		1				
Per.Forbs	0.5				1	0.10	0.10	0.20	0.48
SPCO	0.5	0.03	0.51		1				
*OPPO	3	0.15	--		1				
*SEDE	0.5	0.03	--		1				
TOTAL		5 92	100.00			60.34			289.64

*Not computed in percent composition

Precipitation Data

R. G. #76 - Cochran Exclosure

October 15 to April 15	- 3.51
April 15 to July 1	- 3.84
July 1 to September 1	- 1.38
September 1 to October 15	- 1.63
Season Total	- 10.36
Long Term Average	- 10.98

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Pitted 8/30/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	192.5	9.63	--		8				
AGSM	19	0.95	27.46		14	23.35	1.67	1.23	112.08
FEOC	0.5	0.03	0.87		1	0.01	0.01	0.02	0.05
POSE	20	1.00	28.89		13	7.75	0.60	0.40	37.20
BRTE	10.5	0.53	15.32		10	5.02	0.50	0.48	24.10
Ann.Forbs	18				15	5.49	0.37	0.40	26.35
PLSP	16	0.80	23.12		14				
LEDE	2	0.10	2.89		4				
Per.Forbs	1				1	0.17	0.17	0.17	0.82
ALTE	1	0.05	1.45		1				
*OPPO	.5	0.03	--		1				
TOTAL		3.46	100.00			41.79			200.60

*Not computed in percent composition

Precipitation Data

R. G. #76 Cochran Exclosure

October 15 to April 15	- 3.51
April 15 to July 1	- 3.84
July 1 to September 1	- 1.38
September 1 to October 15	- 1.63
Season Total	- 10.36
Long Term Average	- 10.98

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Cumberland # 1 Inside Non Spray 8/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	135	6.75	--		3				
*CHVI	94	4.70	--		7				
*SAVE	220	11.00	--		3				
ATNU	35.5	1.78	34.25		3	10.95	3.65	.31	52.56
AGSM	26.0	1.30	25.00		14	28.15	2.01	1.08	135.12
SIHY	2	0.10	1.92		2	2.05	1.03	1.03	9.84
ORHY	15.5	0.78	15.00		2	16.99	8.50	1.10	81.55
Ann. Forbs.	24.5				14	20.38	1.46	.83	97.83
MONU	13.5	0.68	13.08		13				
LATE	3.5	0.18	3.46		7				
LEDE	5.5	0.28	5.38		7				
ATAR	2.0	0.10	1.92		4				
Per. Forbs.									
PHHO	5	0.25	--		2				
TOTAL		5.20	100.00			78.52			376.90

*Not computed in percent composition

Precipitation Data

R. G. # 31 Cumberland Exc. # 1

October 15 to April 15	- 5.18
April 15 to July 1	- Not read
July 1 to September 1	- 1.44
September 1 to October 15	- 1.66
Season Total	- 8.28
Long Term Average	- 8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland # 1 Inside Spray 8/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms./20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
ARTR	57	2.85	--		5				
*CHVI	157	7.85	--		6				
ATNU	49	2.45	45.35		5	25.05	5.01	.51	120.24
AGSM	29	1.45	26.85		14	34.57	2.47	1.19	165.94
POSE	28	1.40	25.94		5	13.67	2.73	.49	65.61
SIHY	1	0.05	0.93		1	.47	.47	.47	2.26
ORHY	1	0.05	0.93		1	1.17	1.17	1.17	5.61
TOTAL		5.40	100.00			74.93			359.66

*Not computed in percent composition

Precipitation Data

R. G. # 31 Cumberland Exc. # 1

October 15 to April 15	-	5.18
April 15 to July 1	-	Not read
July 1 to September 1	-	1.44
September 1 to October 15	-	1.66
Season Total	-	8.28
Long Term Average	-	8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. # 1 Outside Non-spray 8/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F E	Wgt./ Unit Basal Area F A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	105	5.25	--		3				
*CHVI	133.5	6.68	--		9				
*SAVE	96	4.80	--		3				
*EULA	15	.75	--		1				
ATNU	48	2.40	50.42		3	18.97	6.32	40	91.06
AGSM	29.5	1.48	31.09		16	23.50	1.47	.80	112.80
ORHY	1	.05	1.05		1	.59	.59	.59	2.83
Ann. Forbs.	16.5				14	10.35	.74	.63	49.68
MONU	11	.55	11.56		13				
LATE	4	.20	4.20		6				
LEDE	1	.05	1.05		1				
CHAL	.5	.03	.63		1				
Per. Forbs.									
*PHHO	7	.35	--		4				
TOTAL		4.76				53.41			256.37

*Not computed in percent composition

Precipitation Data

R. G. # 31 Cumberland Exc. # 1

October 15 to April 15	-	5.18
April 15 to July 1	-	Not read
July 1 to September 1	-	1.44
September 1 to October 15	-	1.66
Season Total	-	8.28
Long Term Average	-	8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland # 1 Outside Spray 8/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F E	Wgt./ Unit Basal Area F A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	104	5.20	--		3				
*CHVI	70.5	3.53	--		11				
*SAVE	25	1.25	--		1				
ATNU	3	0.15	3.11		1	1.50	1.50	.50	7.20
AGSM	44	2.20	45.55		18	46.74	2.60	1.06	224.35
POSE	34	1.70	35.19		8	6.62	.83	.19	31.78
ORHY	2	0.10	2.07		1	.60	.60	.30	2.88
STHY	13	0.65	13.46		2	3.77	1.89	.29	18.10
Ann. Forbs.	.5	--	--		1	.07	.07	.14	.33
LATE	0.5	0.03	0.62		1				
Per. Forbs									
*PHHO	1	0.05	--		1				
TOTAL		4.83	100.00			59.30			284.64

*Not computed in percent composition

Precipitation Data

R. G. # 31 Cumberland Exc. #1

October 15 to April 15	-	5.18
April 15 to July 1	-	Not read
July 1 to September 1	-	1.44
September 1 to October 15	-	1.66
Season Total	-	8.28
Long Term Average	-	8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. # 2 Inside Non-spray Native 8/9/65	Total Trans Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{1}{6}$ E	Wgt./ Unit Basal Area F $\frac{6}{6}$ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	180	9.00	--		11				
*CHVI	64	3.20	--		7				
*TECA	23	1.15	--		2				
AGSM	46	2.30	35.99		15	32.46	2.16	.71	155.81
POSE	46	2.30	35.99		11	20.60	1.87	.45	98.88
Ann Forbs.	4				4	1.95	.49	.49	9.36
DEPI	.5	.03	.47		1				
LEDE	3.5	.18	2.82		4				
Per. Forbs.	31.5				18	13.90	.77	.44	66.72
COPA	11	.55	8.61		9				
TRI	8	.40	6.26		10				
AST	1	.05	.78		2				
CAS	.5	.03	.47		1				
ASTE	11	.55	8.61		3				
*ERSU	13	.65	--		3				
*ERIO	45	2.25	--		5				
*PHHO	103	5.15	--		4				
TOTAL		6.39	100.00			68.91			330.77

*Not computed in percent composition

Precipitation Data

R. G. # 32 Cumberland Exc. # 2

October 15 to April 15	--	Not Read
April 15 to July 1	-	Not Read
July 1 to September 1	-	2.32
September 1 to October 15	-	2.65
Season Total	-	4.97
Long Term Average	-	6.44

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. # 2 Inside Sprayed 8/9/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*TECA	6	.30	--		1				
*CHVI	37.5	1.87	--		9				
AGSM	76	3.80	54.43		18	49.25	2.74	.65	236.40
POSE	56	2.80	40.12		8	29.07	3.63	.52	139.53
CAFI	1	.05	.72		1	.10	.10	.10	.48
Per. Forbs.	6.5				3	2.81	.94	.43	13.49
AST	6	.30	4.30		2				
TRI	.5	.03	.43		1				
*ERSU	8.5	.43	--		5				
TOTAL		6.98	100.00			81.23			389.90

*Not computed in percent composition

Precipitation Data

R. G. # 32 Cumberland Exc. # 2

October 15 to April 15	-	Not Read
April 15 to July 1	-	Not Read
July 1 to September 1	-	2.32
September 1 to October 15	-	2.65
Season Total	-	4.97
Long Term Average	-	6.44

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. # 2 Outside Non-spray (Native) 8/9/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt / Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	138	6.90	--		9				
*CHVI	60.5	3.03	--		7				
AGSM	12	.60	15.96		12	7.50	.63	.63	36.00
POSE	32	1.60	42.55		10	9.13	.91	.29	43.82
Ann. Forbs.	7.5				10	2.22	.22	.30	10.66
LEDE	7	.35	9.31		9				
CHAL	.5	.03	.80		1				
Per. Forbs.	23.5				15	16.57	1.10	.71	79.54
CAS	17	.85	22.60		13				
COPA	.5	.03	.80		1				
TRI	6	.30	7.98		8				
*PHHO	8	.40	--		2				
*ERSU	54	2.70	--		13				
TOTAL		3.76	100.00			35.42			170.02

*Not computed in percent composition

Precipitation Data

R. G. # 32 Cumberland Exc. # 2

October 15 to April 15	-	Not read
April 15 to July 1	-	Not read
July 1 to September 1	-	2.32
September 1 to October 15	-	2.65
Season Total	-	4.97
Long Term Average	-	6.44

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. # 2 Outside Sprayed 8/9/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{c}{c} E$	Wgt./ Unit Basal Area $F \frac{c}{c} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*CHVI	33.5	1.68	--		10				
AGSM	58.5	2.93	56.78		16	18.87	1.18	.32	90.58
POSE	36	1.80	34.88		13	8.10	.62	.23	38.88
SIHY	1	.05	.97		1	.53	.53	.53	2.54
Ann. Forbs.	1				1	.18	.18	.18	.86
DEPI	1	.05	.97		1				
Per. Forbs.	6.5				7	.72	.10	.11	3.46
COPA	1	.05	.97		2				
TRI	1	.05	.97		2				
LILE	4.5	.23	4.46		4				
*ERSU	16	.80	---		6				
*PHHO	4	.20	---		3				
TOTAL		5.16	100.00			28.40			136.32

*Not computed in percent composition

Precipitation Data

R. G. # 32 Cumberland Exc. # 2

October 15 to April 15	-	Not read
April 15 to July 1	-	Not read
July 1 to September 1	-	2.32
September 1 to October 15	-	2.65
Season Total	-	4.97
Long Term Average	-	6.44

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. # 3 Inside Non-spray (Native) 8/9/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F E	Wgt./ Unit Basal Area F A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	360	18.00	--		9				
*CHVI	28.5	1.43	--		12				
POSE	80	4.00	66.23		15	25.09	1.67	.31	120.43
AGSM	27.5	1.38	22.85		18	18.86	1.05	.69	90.53
Per. Forbs.	13				15	3.75	.25	.29	18.00
CAS	2.5	.13	2.15		4				
TRI	10.5	.53	8.77		12				
*ERSU	7	.35	--		8				
*PHHO	38	1.90	--		12				
TOTAL		6.04	100.00			47.70			228.96

*Not computed in percent composition

Precipitation Data

R. G. # 33 Cumberland Exc. # 3

October 15 to April 15	-	5.62
April 15 to July 1	-	Not read
July 1 to September 1	-	2.09
September 1 to October 15	-	2.55
Season Total	-	10.26
Long Term Average	-	9.51

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. # 3 Inside Sprayed 8/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
ARTR	175	8.75	--		11				
*CHVI	111	5.55	--		17				
*TECA	2	.10	--		1				
AGSM	20.5	1.03	53.93		14	12.46	.89	.61	59.81
POSE	13	.65	34.03		5	2.42	.48	.19	11.61
Per. Forbs.	4.5				6	1.86	.31	.41	8.93
UNKN	2.5	.13	6.81		3				
AST	2	.10	5.23		3				
*ERSU	3	.15	--		1				
TOTAL		1.91	100.00			16.74			80.35

*Not computed in percent composition

Precipitation Data

R. G. # 33 Cumberland Exc. # 3

October 15 to April 15	-	5.62
April 15 to July 1	-	Not read
July 1 to September 1	-	2.09
September 1 to October 15	-	2.55
Season Total	-	10.26
Long Term Average	-	9.51

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. # 3 Outside Non-spray (Native) 8/9/65	Total Trans Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{e}{e}$ E	Wgt./ Unit Basal Area F $\frac{e}{e}$ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	272	13.60	--		8				
*CHVI	23.5	1.18	--		11				
POSE	46.5	2.33	54.06		17	12.72	.75	.27	61.06
AGSM	29.5	1.48	34.34		16	15.92	1.00	.54	76.42
SIHY	1	.05	1.16		1	1.23	1.23	1.23	5.90
Ann Forbs.	1				2	.06	.03	.06	.29
LEDE	1	.05	1.16		2				
Per.Forbs.	8				10	5.34	.53	.67	25.63
TRI	4	.20	4.64		7				
CAS	4	.20	4.64		7				
*ERSU	30	1.50	--		7				
*PHHO	5	.25	--		2				
TOTAL		4.31	100.00			35.27			169.30

*Not computed in percent composition

Precipitation Data

R. G. # 33 Cumberland Exc. # 3

October 15 to April 15	-	5.62
April 15 to July 1	-	Not read
July 1 to September 1	-	2.09
September 1 to October 15	-	2.55
Season Total	-	10.26
Long Term Average	-	9.51

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. # 3 Outside Spray 8/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{e}{e} E$	Wgt./ Unit Basal Area $F \frac{e}{e} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	323	16.15	--		10				
*CHVI	116.5	5.83	--		15				
AGSM	36	1.80	83.34		19	27.51	1.45	.76	132.05
POSE	5	.25	11.57		3	1.46	.49	.29	7.01
Per. Forbs.	2				3	.20	.07	.10	.96
TRI	1.5	.08	3.70		3				
AST	.5	.03	1.39		1				
*ERSU	2	.10	--		1				
*PHHO	3	.15	--		1				
TOTAL		2.16	100.00			29.17			140.02

*Not computed in percent composition

Precipitation Data

R. G. # 33 Cumberland Exc. # 3

October 15 to April 15	-	5.62
April 15 to July 1	-	Not read
July 1 to September 1	-	2.09
September 1 to October 15	-	2.55
Season Total	-	10.26
Long Term Average	-	9.51

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. #4 Inside Native 8/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*EULA	79	3.95	--		3				
ATNU	117	5.85	82.39		3	36.47	12.16	.31	175.06
AGSM	4	.20	2.82		3	4.54	1.51	1.14	21.79
Ann.Forbs	21				14	15.80	1.13	.75	75.84
MONU	14	.70	9.86		12				
LATE	4	.20	2.82		6				
UNK. Per.Forbs	3	.15	2.11		2				
*PHHO	3	.15	--		2				
TOTAL		7.10	100.00			56.81			272.69

*Not computed in percent composition

Precipitation Data

R. G. # 34 Cumberland #4

October 15 to April 15	- 4.93
April 15 to July 1	- Not Read
July 1 to September 1	- 1.22
September 1 to October 15	- 1.47
Season Total	- 7.62
Long Term Average	- 7.44

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland Exc. #4 Outside Native 8/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{G}{E}$	Wgt./ Unit Basal Area $F \frac{G}{B} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
ATNU	386	19.30	91.56		12	129.00	10.75	.33	619.20
[illegible]P	20	1.00	4.74		1	5.49	5.49	.27	26.35
POSE	5	.25	1.19		2	1.28	.64	.26	6.14
Ann.Forbs	10.5				10	18.38	1.84	1.75	88.23
MONU	9	.45	2.13		8				
LATE	1.5	.08	.38		2				
TOTAL		21.08	100.00			154.15			739.92

Precipitation Data

R. G. # 34 Cumberland Exclosure #4

October 15 to April 15	- 4.93
April 15 to July 1	- Not read
July 1 to September 1	- 1.22
September 1 to October 15	- 1.47
Season Total	- 7.62
Long Term Average	- 7.44

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Demer Inside 7/31/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	247	12.35	--		9				
AGSM	7	0.35	8.01		12	8.80	0.73	1.26	42.24
POSE	16.5	0.83	18.99		16	7.06	0.44	0.43	33.89
BOGR	55	2.75	62.93		12	17.81	1.48	0.32	85.49
SIHY	1	0.05	1.14		2	0.92	0.46	0.92	4.42
BRTE	0.5	0.03	0.69		1	0.01	0.01	0.02	0.05
Ann.Forbs	7				13	2.06	0.16	0.29	9.89
LARE	0.5	0.03	0.69		1				
PLPA	6.5	0.33	7.55		13				
*OPPO	46	2.30	--		3				
TOTAL		4.37	100.00						175.98

*Not computed in percent composition

Precipitation Data

R. G. # 8 Demer Exclosure

October 15 to April 15	- 1.82
April 15 to July 1	- 3.20
July 1 to September 1	- 0.80
September 1 to October 15	- 1.08
Season Total	- 6.90
Long Term Average	- 8.06

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Demer Outside 7/31/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	159	7.95	--		8				
AGSM	3.5	0.18	8.11		6	3.08	.51	.88	14.78
BRTE	1.5	0.08	3.60		3	.42	.14	.28	2.02
BOGR	22	1.10	49.54		10	5.97	.60	.27	28.66
POSE	10.5	0.53	23.88		11	1.76	.16	.17	8.45
Ann.Forbs	6				12	2.54	.21	.42	12.19
PLPA	6	0.30	13.52		12				
Per.Forbs	0.5				1	.09	.09	.18	.43
SPCO	0.5	0.03	1.35		1				
*OPPO	47	2.35	--		2				
TOTAL		2.22	100.00			13.86			66.53

*Not computed in percent composition

Precipitation Data

R. G. # 8 Demer Exclosure

October 15 to April 15	- 1.82
April 15 to July 1	- 3.20
July 1 to September 1	- 0.80
September 1 to October 15	- 1.08
Season Total	- 6.90
Long Term Average	- 8.06

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Dutch Nick Flat Exclosure Inside 7/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
BOGR	1726	8.63	96.76		196	391.93	2.00	.23	188.13
[illegible]E	48	.24	2.69		38	12.94	.34	.27	6.21
SPAI	3	.02	.22		1	1.91	1.91	.64	.91
Ann.Forbs	3.5				7	1.02	.15	.29	.49
PLPA	.5	.01	.11		1				
CHAL	3	.02	.22		6				
Per.Forbs									
*OPPO	332.5	1.66	--		63				
TOTAL		8.92	100.00			407.80			195.75

*Not computed in percent composition

Precipitation Data

R. G. # 4 Dutch Nick Flat Exclosure

October 15 to April 15	- 1.90
April 15 to July 1	- 2.39
July 1 to September 1	- 1.00
September 1 to October 15	- .96
Season Total	- 6.25
Long Term Average	- 7.22

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Dutch Nick Flat Exclosure Outside 7/10/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{A}{E}$ E	Wgt./ Unit Basal Area F $\frac{A}{V}$ A	Pounds Per Acre F x .48
ARSP	9	.05	.74		2	2.76	1.38	.31	1.32
BOGR	1298.5	6.49	96.29		198	372.67	1.88	.29	178.88
[illegible]E	32.5	.16	2.37		43	9.12	.21	.28	4.38
[illegible]SQ	1	.01	.15		2	1.38	.69	1.38	.66
ORHY	2.5	.01	.15		2	3.81	1.91	1.52	1.83
SIHY	2	.01	.15		2	.45	.23	.23	.22
Ann. Forbs	2				3	.11	.04	.06	.05
UNK. Per. Forbs	2	.01	.15		3				
*OPPO	309	1.55	--		86				
TOTAL		6.74	100.00			390.30			187.34

*Not computed in percent composition

Precipitation Data

R. G. # 4 Dutch Nick Flat Exclosure

October 15 to April 15	- 1.90
April 15 to July 1	- 2.39
July 1 to September 1	- 1.00
September 1 to October 15	- .96
Season Total	- 6.25
Long Term Average	- 7.22

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Granite Mtn. Inside Non-spray (Native) 8/27/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms./20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{\circ}{\circ} E$	Wgt./ Unit Basal Area $F \frac{\circ}{\circ} A$	Pounds Per Area F x 4.8
	A	B	C	D	E	F	G	H	I
*A[illegible]R	328	16.40	--		13				
AGSM	29	1.48	14.59		17	23.91	1.41	0.82	114.77
POFE	146	7.30	72.00		18	49.17	2.73	0.34	236.02
POSE	25.5	1.28	12.62		10	5.72	0.57	0.22	27.46
Per. Forbs.	1.5				3	0.25	0.08	0.17	1.20
ERI	1.5	0.08	0.79		3				
*PHHO	4	0.20	--		2				
TOTAL		10.14	100.00			79.05			379.45

Precipitation Data

R. G. # 6 Granite Mtn. Exc.

October 15 to April 15	-	2.44
April 15 to July 1	-	3.55
July 1 to September 1	-	2.48
September 1 to October 15	-	0.51
Season Total	-	8.98
Long Term Average	-	8.09

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Granite Mtn. Inside Spray 8/27/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
AGSM	78	3.90	22.85		19	94.07	4.95	1.21	451.54
P[illegible]	234	11.70	68.59		16	94.55	5.91	0.40	453.84
P[illegible]	24.5	1.23	7.21		8	12.93	1.62	0.53	62.06
STHY	2	0.10	0.59		2	2.15	1.08	1.08	10.32
Per. Forbs.	2.5				3	2.41	0.80	0.96	11.57
AST	2.5	0.13	0.76		3				
*PHHO	2	0.10	--		1				
TOTAL		17.06	100.00			206.11			989.33

*Not computed in percent composition

Precipitation Data

R. G. # 6 Granite Mtn. Exc.

October 15 To April 15	-	2.44
April 15 to July 1	-	3.55
July 1 to September 1	-	2.48
September 1 to October 15	-	0.51
Season Total	-	8.98
Long Term Average	-	8.09

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Granit Mtn. Outside Non-spray (Native) 8/25/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Average Height in cm.	Absolute Plot Fre-quency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occur-rences F E	Wgt./ Unit Basal Area F A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*A[illegible]	211	10.55	--		9				
AGSM	36	1.80	23.08		17	15.53	0.91	0.43	74.54
POFE	91	4.55	58.33		14	6.45	0.46	0.07	30.96
POSE	27	1.35	17.31		8	4.06	0.51	0.15	19.49
SIHY	2	0.10	1.28		1	0.67	0.67	0.34	3.22
*PHHO	33	1.65	--		6				
TOTAL		7.80	100.00			27.71			128.21

*Not computed in percent composition

Precipitation Data

R.G. # 6 Granite Mtn. Exc.

October 15 to April 15	-	2.44
April 15 to July 1	-	3.55
July 1 to September 1	-	2.48
September 1 to October 15	-	0.51
Season Total	-	8.98
Long Term Average	-	8.09

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Granite Mtn. Outside Spray 8/25/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{x}{x} E$	Wgt./ Unit Basal Area $F \frac{x}{x} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
ARTR	30	1.50	--		4				
*CHVI	10	0.50	--		1				
AGSM	99.5	4.98	36.45		20	43.23	2.16	0.43	207.50
POFE	138	6.90	50.52		12	8.56	0.71	0.06	41.09
POSE	29	1.45	10.61		12	5.15	0.43	0.18	24.72
STCO	5	0.25	1.83		1	0.48	0.48	0.10	2.30
Per.Forbs.	1.5				3	0.21	0.07	0.14	1.01
AST	1.5	0.08	0.59		3				
*PHHO	1	0.05	--		1				
TOTAL		13.66	100.00						276.62

Precipitation Data

R. G. # g Granite Mtn. Exc.

October 15 to April 15	-	2.44
April 15 to July 1	-	3.55
July 1 to September 1	-	2.48
September 1 to October 15	-	0.51
Season Total	-	8.98
Long Term Average	-	8.09

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Farson Exclosure Inside 8/11/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
[illegible]TR	210	10.50	--		10				
[illegible]VI	12	.60	--		4				
ORHY	9	.45	23.68		4	5.31	1.33	.59	25.49
AGSM	16	.80	42.11		14	14.97	1.07	.94	71.86
SIHY	3	.15	7.89		2	4.39	2.20	1.10	21.07
POSE	4	.20	10.53		1	1.81	1.81	.45	8.69
STCO	4	.20	10.53		1	1.19	1.19	.50	5.71
Ann. Forbs	2				4	.20	.05	.10	.96
CHAL	2	.10	5.26		4				
Per. Forbs									
(*) SEDE	7	.35	--		3				
*PHHO	1	.05	--		1				
TOTAL		1.90	100.00			27.87			133.78

[illegible]t computed in percent composition

(*) Clubmoss

Precipitation Data

R. G. # 2 Farson Exclosure

October 15 to April 15	- 1.51
April 15 to July 1	- 3.53
July 1 to September 1	- 1.90
September 1 to October 15	- 1.28
Season Total	- 8.22
Long Term Average	- 5.38

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Farson Exclosure Outside 8/11/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{x}{+}$ E	Wgt./ Unit Basal Area F $\frac{\div}{\times}$ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*[illegible]TR	290	14.50	--		13				
*[illegible]VI	60.5	3.03	--		8				
AGSM	16.5	.83	43.68		14	7.10	.51	.43	34.08
ORHY	6.5	.33	17.37		3	2.31	.77	.36	11.09
STCO	4	.20	10.53		2	1.70	.85	.43	8.16
POSE	2	.10	5.26		1	.52	.52	.26	2.50
SIHY	3.5	.18	9.47		2	2.08	1.04	.59	9.98
Ann.Forbs	4.5				8	2.40	.30	.53	11.52
CHAL	4.5	.23	12.11		8				
Per.Forbs	.5				1	.05	.05	.10	.24
AST	.5	.03	1.58		1				
*ERIO	1	.05	--		1				
*PHHO	14	.70	--		6				
*OPPO	1	.05	--		1				
(*) SEDE	1	.05	--		1				
TOTAL		1.90	100.00			16.16			77.57

*Not computed in percent composition

(*) Clubmoss

Precipitation Data

R. G. # 2 Farson Exclosure

October 15 to April 15	- 1.51
April 15 to July 1	- 3.53
July 1 to September 1	- 1.90
September 1 to October 15	- 1.28
Season Total	- 8.22
Long Term Average	- 5.38

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 — No. Plots 20

Cover Determined by Area Estimate

Dry Fork Halogeton Pasture Exc. #1 7/14/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	649.5	3.25	77.02		127	878.19	6.91	1.35	421.53
ERSP	3	.02	.47		2	3.84	1.92	1.28	1.84
TESP	10	.05	1.18		6	18.87	3.15	1.89	9.06
SIHY	99	.50	11.85		63	108.03	1.71	1.09	51.85
POSE	44.5	.22	5.21		16	36.78	2.30	.83	17.65
Ann.Forbs	26.5				48	6.56	.14	.25	3.15
HAGL	24	.12	2.84		47				
LARE	1	.01	.24		2				
UNK.	1	.01	.24		2				
LEDE	.5	.01	.24		1				
Per.Forbs	6				12	1.04	.09	.17	.50
ALTE	6	.03	.71		12				
*OPPO	1	.01	--		2				
TOTAL		4.22	100.00			1053.31			505.58

*Not computed in percent composition

Precipitation Data

R. G. # 24 Dry Fork Halogeton Pasture

October 15 to April 15	- 1.36
April 15 to July 1	- 2.31
July 1 to September 1	- 1.90
September 1 to October 15	- .80
Season Total	- 6.37
Long Term Average	- 5.63

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATES SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 — No. Plots 20

Cover Determined by Area Estimate

Dry Fork Halogeton Pasture Exc. #2 7/16/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	1094	5.47	79.27		157	1446.91	9.22	1.32	694.51
ASP	3.5	.02	.29		3	5.04	1.68	1.44	2.42
SIHY	74	.37	5.36		48	83.60	1.74	1.13	40.13
POSE	2	.01	.15		1	5.27	5.27	2.64	2.53
Ann.Forbs	165				155	59.89	.39	.36	28.75
HAGL	88	.44	6.37		147				
EUSE	7	.04	.58		14				
UNK.	5.5	.03	.43		5				
DEPI	15	.08	1.16		27				
LATE	26.5	.13	1.88		51				
LEDE	4	.02	.29		4				
MATA	.5	.01	.15		1				
LEPE	17.5	.09	1.30		27				
GIPU	.5	.01	.15		1				
SAKA	.5	.01	.15		1				
Per.Forbs	34				64	17.64	.28	.52	8.47
ATE	31.5	.16	2.32		61				
GEAL	2.5	.01	.15		4				
*OPPO	5	.03	--		4				
TOTAL		6.90	100.00			1618.35			776.81

*Not computed in percent composition

Precipitation Data

R. G. # 24 Dry Fork Halogeton Pasture

October 15 to April 15	- 1.36
April 15 to July 1	- 2.31
July 1 to September 1	- 1.90
September 1 to October 15	- .80
Season Total	- 6.37
Long Term Average	- 5.63

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Dry Fork Halogeton Pasture Exc #3 7/19/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
HAU	828	4.14	91.39		125	894.38	7.16	1.08	429.30
SIHY	4	.02	44		3	5.30	1.77	1.33	2.54
Ann.Forbs	47				73	15.94	.22	.34	7.65
HAGL	35.5	.18	3.98		61				
MATA	1	.01	.22		2				
LATE	4	.02	.44		8				
DEPI	4	.02	.44		7				
LEDE	1.5	.01	.22		3				
EUSE	1	.01	.22		2				
Per.Forbs	22				41	11.81	.29	.54	5.67
ALTE	21.5	.11	2.43		40				
OEAL	.5	.01	.22		1				
*OPPO	22	.11	--		3				
TOTAL		4.53	100.0			927.43			445.16

*Not computed in percent composition

Precipitation Data

R. G. # 24 Dry Fork Halogeton Pasture

October 15 to April 15	- 1.36
April 15 to July 1	- 2.31
July 1 to September 1	- 1.90
September 1 to October 15	- .80
Season Total	- 6.37
Long Term Average	- 5.63

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Dry Fork Halogeton Pasture #1 7/15/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences $F \div E$	Wgt./ Unit Basal Area $F \div A$	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	1695	8.48	97.25		165	859.46	5.21	.51	412.54
STHY	15	.08	.93		11	4.83	.44	.32	2.32
Ann. Forbs	22.5				35	15.71	.45	.70	7.54
HAGL	15.5	.08	.93		27				
SAKA	1	.01	.11		2				
MATA	3.5	.02	.23		4				
EUSE	.5	.01	.11		1				
DEPI	1.5	.01	.11		3				
LEDE	.5	.01	.11		1				
Per. Forbs	1.5				2	.21	.11	.14	.10
OECA	1	.01	.11		1				
SPCO	.5	.01	.11		1				
*OPPO	4.5	.02	--		3				
TOTAL		8.72	100.00			880.21			422.50

*Not computed in percent composition

Precipitation Data

R. G. # 24 Dry Fork Halogeton Pasture

October 15 to April 15	- 1.36
April 15 to July 1	- 2.31
July 1 to September 1	- 1.90
September 1 to October 15	- .80
Season Total	- 6.37
Long Term Average	- 5.63

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined By Area Estimate

Dry Fork Halogeton Pasture #2 7/15/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{o}{e} E$	Wgt./ Unit Basal Area $F \frac{o}{e} A$	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	694.5	3.47	75.11		145	518.19	3.57	.75	248.73
SIHY	6	.03	.65		4	3.04	.76	.51	1.46
Ann. Forbs	209				176	176.12	1.00	.84	84.54
HAGL	203.5	1.02	22.08		174				
LATE	5	.03	.65		8				
LEDE	.5	.01	.21		1				
Per. Forbs	11				19	2.85	.15	.26	1.37
ALTE	11	.06	1.30		19				
*OPPO	18	.09	--		3				
TOTAL		4.62	100.00			700.20			336.10

*Not computed in percent composition

Precipitation Data

R. G. # 24 Dry Fork Halogeton Pasture

October 15 to April 15	- 1.36
April 15 to July 1	- 2.31
July 1 to September 1	- 1.90
September 1 to October 15	- .80
Season Total	- 6.37
Long Term Average	- 5.63

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 — No. Plots 20

Cover Determined by Area Estimate

Dry Fork Halogeton Pasture Pasture # 4B 7/17/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{c}{c}$ E	Wgt./ Unit Basal Area F $\frac{c}{G}$ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	925.2	4.63	84.18		169	850.49	5.03	.92	408.24
SIHY	14	.07	1.27		15	9.94	.66	.71	4.77
Ann. Forbs.	154				194	93.21	.48	.61	44.74
HAGL	138.5	.69	12.55		193				
LEDE	2.5	.01	.18		5				
LATE	5	.03	.55		10				
DEPI	1.5	.01	.18		3				
LEPE	5.5	.03	.55		10				
UNK	1	.01	.18		2				
Per.Forbs.	2.5				4	.57	.14	.23	.27
TRDU	1	.01	.18		1				
ALTE	1.5	.01	.18		3				
*OPPO	26.5	.13	--		4				
TOTAL	5.50	100.00				954.21			458.02

*Not computed in percent composition

Precipitation Data

R. G. # 24 Dry Fork Halogeton Pasture

October 15 to April 15	-	1.36
April 15 to July 1	-	2.31
July 1 to September 1	-	1.90
September 1 to October 15	-	.80
Season Total	-	6.37
Long Term Average	-	5.63

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Dry Fork Halogeton Pastures Pasture # 5 7/16/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	1045	5.23	86.87		173	762.11	4.41	.73	365.82
ARSP	5.5	.03	.50		8	.84	.11	.15	.40
SIHY	49	.25	4.15		31	23.34	.75	.48	11.20
ORHY	3.5	.02	.33		4	1.25	.31	.36	.60
Ann. Forbs.	59				97	9.36	.10	.16	4.49
HAGL	43.5	.22	3.65		82				
EUSE	1.5	.01	.17		3				
DEPI	5	.03	.50		9				
LEDE	2.5	.01	.17		4				
SAKA	2.5	.01	.17		4				
UNK	4	.02	.33		4				
Per. Forbs.	38.5				40	5.60	.14	.15	2.69
ALTE	38.5	.19	3.16		40				
*OPPO	2	.01	--		1				
TOTAL		6.02	100.00			802.50			385.20

*Not computed in percent composition

Precipitation Data

R. G. # 24 Dry Frok Halogeton Pasture

October 15 to April 15	-	1.36
April 15 to July 1	-	2.31
July 1 to September 1	-	1.90
September 1 to October 15	-	.80
Long Term Average	-	5.63
Season Total	-	6.37

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Dry Fork Halogeton Pastures 7-A 7/19/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{F}{E}$	Wgt./ Unit Basal Area $F \frac{F}{A}$	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
HU	512.5	2.56	85.62		113	696.01	6.16	1.36	334.08
SIHY	11.5	.06	2.01		11	15.16	1.38	1.32	7.28
Ann.Forbs	54				73	19.42	.27	.36	9.32
HAGL	30	.15	5.02		59				
MATA	21.5	.11	3.68		16				
LATE	1.5	.01	.33		3				
DEPI	.5	.01	.33		1				
LEDE	.5	.01	.33		1				
Per.Forbs	16.5				32	4.71	.15	.29	2.26
ALTE	16.5	.08	2.68		32				
*OPPO	91	.46	--		8				
TOTAL		2.99	100.00			735.30			352.94

*Not computed in percent composition

Precipitation Data

R. G. # 24 Dry Fork Halogeton Pasture

October 15 to April 15	- 1.36
April 15 to July 1	- 2.31
July 1 to September 1	- 1.90
September 1 to October 15	- .80
Season Total	- 6.37
Long Term Average	- 5.63

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Horse Creek AGSM Type Inside 8/2/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	180	9.00	--		4				
AGSM	68	3.40	81.93		20	78.55	3.93	1.16	377.04
POSE	15	.75	18.07		10	4.23	.42	.28	20.30
TOTAL		4.15	100.00			82.78			397.34

*Not computed in percent composition

Precipitation Data

R. G. # 12 Horse Creek Exclosure

October 15 to April 15	- 4.84
April 15 to July 1	- 3.39
July 1 to September 1	- 2.44
September 1 to October 15	- 1.00
Season Total	- 11.67
Long Term Average	- 11.73

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Horse Creek AGSM Type Outside 8/2/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{H}{G}$ E	Wgt./ Unit Basal Area F $\frac{I}{H}$ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	182.5	9.13	--		10				
AGSM	47	2.35	65.83		20	21.57	1.08	.46	103.54
POSE	17.5	.88	24.65		11	6.13	.56	.35	29.42
Ann.Forbs	6.5				9	.55	.06	.08	2.64
LATE	.5	.03	.84		1				
SAKA	3	.15	4.20		3				
LEDE	.5	.03	.84		1				
CHAL	2.5	.13	3.64		5				
TOTAL		3.57	100.00			28.25			135.60

*Not computed in percent composition

Precipitation Data

R. G. # 12 Horse Creek Exclosure

October 15 to April 15	- 4.84
April 15 to July 1	- 3.39
July 1 to September 1	- 2.44
September 1 to October 15	- 1.00
Season Total	- 11.67
Long Term Average	- 11.73

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Horse Creek AGSP Type Inside 8/2/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	242	12.10	--		8				
AGSP	90	4.50	88.24		19	94.94	5.00	1.05	455.71
POSE	3	.15	2.94		3	2.05	.68	.68	9.84
AGSM	7	.35	6.86		9	4.52	.50	.65	21.70
Per.Forbs	2				4	.15	.04	.08	.72
SPCO	2	.10	1.96		4				
*OPPO	7	.35	--		2				
*PHHO	8	.40	--		5				
TOTAL		5.10	100.00			101.66			487.97

*Not computed in percent composition

Precipitation Data

R. G. # 12 Horse Creek Exclosure

October 15 to April 15	- 4.84
April 15 to July 1	- 3.39
July 1 to September 1	- 2.44
September 1 to October 15	- 1.00
Season Total	- 11.67
Long Term Average	- 11.73

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Horse Creek AGSP Type Outside 8/2/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{e}{c} E$	Wgt./ Unit Basal Area $F \frac{e}{s} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	246	12.30	--		8				
*GUSA	3	.15	--		2				
AGSP	5	.25	13.89		2	3.70	1.85	.74	17.76
POSE	12	.60	33.33		8	2.04	.26	.17	9.79
AGSM	19	.95	52.78		18	12.52	.70	.67	60.05
Per.Forbs									
*PHHO	1	.05	--		1				
*OPPO	2	.10	--		1				
TOTAL						18.25			87.60

*Not computed in percent composition

Precipitation Data

R. G. #12 Horse Creek Exclosure

October 15 to April 15	- 4.84
April 15 to July 1	- 3.39
July 1 to September 1	- 2.44
September 1 to October 15	- 1.00
Season Total	- 11.67
Long Term Average	- 11.73

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kane-Juniper Exc. Inside Native 8/16/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F/E	Wgt./ Unit Basal Area F/A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
[illegible]NO	115	5.75	--		4				
①AGSP	13	0.65	64.36		6	5.24	.87	.40	25.15
POSE	2	.10	9.90		1	.07	.07	.04	.34
Ann. Forbs.	4.5				3	.46	.15	.10	2.21
GIPU	4.5	0.23	22.77		3				
Per. Forbs.	0.5				1	.08	.08	.15	.38
LES	0.5	0.03	2.97		1				
*OPPO	1	0.05	--		1				
*PHHO	0.5	0.03	--		1				
TOTAL	1.01	100.00				5.85			28.08

*Not computed in percent composition

① This is a variant and should probably be called Agrophron griffithsii, based on the pubescent sheaths and presence of some short rhizomes as determined from collections made from this area

Precipitation Data

R. G. # 21 Kane Deer Exc.

October 15 to April 15	- 3.53
April 15 to July 1	- 3.60
July 1 to September 1	- 3.12
September 1 to October 15	- 2.17
Season Total	- 12.42

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Kane Juniper Exc. Inside Sprayed 8/16/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
©AGSP	14	0.70	71.43		7	5.29	0.76	0.39	25.39
POSE	2	0.10	10.20		1	0.20	0.20	0.10	0.96
Ann. Forbs	3				2	0.56	0.28	0.19	2.69
GIPU	3	0.15	15.31		2				
Per. Forbs	0.5				1	0.03	0.03	0.06	0.14
LES	0.5	0.03	3.06		1				
*OPPO	2	0.10	--		1				
*OPPO	1.5	0.08	--		2				
TOTAL		0.98	100.00			6.08			29.18

*Not computed in percent composition

©This is a variant and should probably be called Agropyron griffithsii, based on the pubescent sheaths and presence of some short rhizomes as determined from collections made from this area

Precipitation Data

R. G. # 21 Kane Deer Exc.

October 15 to April 15	- 3.53
April 15 to July 1	- 3.60
July 1 to September 1	- 3.12
September 1 to October 15	- 2.17
Season Total	- 12.42

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kane Juniper Exc. Outside Non-spray 8/16/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
ARTR	1.0	0.05	--		2				
[illegible]GSP	4	.20	44.43		2	1.38	0.69	0.35	6.62
POSE	1.5	.08	17.78		2	0.11	0.06	0.07	0.53
STHY	0.5	.03	6.67		1	0.01	0.01	0.02	0.05
Ann.Forbs.	1.5				3	0.28	0.09	0.19	1.34
UNKN #1	0.5	.03	6.67		1				
UNKN #2	0.5	.03	6.67		1				
SAKA	0.5	.03	6.67		1				
Per.Forbs.	1				1	0.24	0.24	0.24	1.15
LES	1	.05	11.11		1				
*PHHO	1	.05	--		1				
*OPPO	1	.05	--		1				
TOTAL		0.45	100.00			2.02			9.69

*Not computed in percent composition

@ This is a variant and should probably be called Agropyron griffithsii, based on the pubescent sheaths and presence of some short rhizomes as determined from collections made from this area

Precipitation Data

R. G. # 21 Kane Deer Exc.

October 1t to April 15	- 3.53
April 15 to July 1	- 3.60
July 1 to September 1	- 3.12
September 1 to October 15	- 2.17
Season Total	- 12.42

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kane Juniper Exc. Outside Sprayed 8/16/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
⊙ESP	11	0.55	44.71		6	6.06	1.01	0.55	29.09
POSE	1	0.05	4.07		1	0.08	0.08	0.08	0.38
SIHY	4	0.20	16.26		1	0.23	0.23	0.06	1.10
Ann. Forbs	7.5				7	1.24	0.18	0.17	5.95
GIPU	7.5	0.38	30.89		7				
Per. Forbs	1				1	0.59	0.59	0.59	2.83
SECA	1	0.05	4.07		1				
*PHHO	2	0.10	--		3				
*OPPO	1	0.05	--		1				
TOTAL		1.23	100.00			8.20			39.35

*Not computed in percent composition

⊙This is a variant and should probably be called Agropyron griffithsii, based on the pubescent sheaths and presence of some short rhizomes as determined from collections made from this area.

Precipitation Data

R. G. # 21 Kane Deer Exc.

October 15 to April 15	- 3.53
April 15 to July 1	- 3.60
July 1 to September 1	- 3.12
September 1 to October 15	- 2.17
Season Total	- 12.42

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kirby Creek Inside Native 7/30/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*SAVE	50	2.50	--		3				
AGSM	10.5	0.53	11.78		12	20.05	1.67	1.91	96.24
BRTE	16.5	0.83	18.44		16	18.93	1.18	1.15	90.86
POSE	15	0.75	16.67		9	8.06	.90	.54	38.69
Ann.Forbs	47.5				20	49.11	2.46	1.03	235.73
LEPE	39	1.95	43.33		20				
SAKA	1	0.05	1.11		2				
KOSC	0.5	0.03	0.67		1				
HAGL	2	0.10	2.22		4				
ATAR	2	0.10	2.22		4				
LARE	2	0.10	2.22		4				
CAMI	0.5	0.03	0.67		1				
PLSP	0.5	0.03	0.67		1				
TOTAL		4.50	100.00			96.15			461.52

*Not computed in percent composition

Precipitation Data

R. G. #77 - Kirby Creek Exclosure

October 15 to April 15	- No reading
April 15 to July 1	- 4.03
July 1 to September 1	- 0.87
September 1 to October 15	- 1.40
Long Term Average	- 9.07

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kirby Creek Outside Native 7/30/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*SAVE	69	3.45	--		5				
AGSM	9	0.45	8.96		7	16.98	2.43	1.89	81.50
POSE	3	0.15	2.99		1	2.38	2.38	0.79	11.42
BRTE	28.50	1.43	28.49		13	38.61	2.97	1.35	185.33
Ann. Forbs	59.5				18	51.84	2.88	0.87	248.83
LEPE	55	2.75	54.78		18				
KOSC	1.5	0.08	1.59		3				
ATAR	2	0.10	1.99		4				
HAGL	0.5	0.03	0.60		1				
SAKA	0.5	0.03	0.60		1				
TOTAL		5.02	100.00			109.81			527.08

*Not computed in percent composition

Kirby Creek Exclosure — Precipitation Data

R. G. #77 - October 15 to April 15 - No reading
April 15 to July 1 - 4.03
July 1 to September 1 - 0.87
September 1 to October 15 - 1.40
Long Term Average - 9.07

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kirby Creek Inside Cultivated 8/18/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*SAVE	30.5	1.53	--		3				
*OSE	5.5	0.28	16.18		5	12.65	2.53	2.30	60.72
AGSM	5	0.25	14.45		4	14.30	3.58	2.86	68.64
Ann.Forbs	24				20	37.56	1.88	1.57	180.29
Mustard	24	1.20	69.37		20				
*OPPO	0.5	0.03	--		1				
TOTAL		1.73	100.00			64.51			309.65

*Not computed in percent composition

Precipitation Data

R. G. #77 - Kirby Creek Exclosure

October 15 to April 15	- No reading
April 15 to July 1	- 4.03
July 1 to September 1	- 0.87
September 1 to October 15	- 1.40
Long Term Average	- 9.07

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Kirby Creek Inside Pitted 8/18/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*SAVE	55.5	2.78	--		7				
AGSM	6	.30	7.83		4	13.31	3.33	2.22	63.89
POSE	5.5	.28	7.31		4	7.10	1.78	1.29	34.08
BRTE	2	.10	2.61		3	.97	.32	.49	4.66
Ann. Forbs Mustard	63.0	3.15	82.25		20	36.58	1.83	.58	175.58
TOTAL		3.83	100.0			57.96			278.21

*Not computed in percent composition

Precipitation Data

R. G. #77 - Kirby Creek Exclosure

October 15 to April 15	- No reading
April 15 to July 1	- 4.03
July 1 to September 1	- 0.87
September 1 to October 15	- 1.40
Long Term Average	- 9.07

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Lower Gov't Draw Inside Non-Spray Native 8/24/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{c}{f} E$	Wgt./ Unit Basal Area $F \frac{c}{e} A$	Pounds Per Acre F x 4.8
*ARTR	187	9.35	--		10				
ACSM	46.5	2.33	41.17		20	40.70	2.04	.88	195.36
[illegible]E	42	2.10	37.11		12	13.74	1.15	.33	65.95
STCO	1	.05	.88		1	1.13	1.13	1.13	5.42
BRTE	3.5	.18	3.18		4	1.50	1.50	.43	7.20
Ann.Forbs	19				19	2.57	.14	.14	12.34
LEDE	4.5	.23	4.06		8				
CHAL	4.5	.23	4.06		9				
UNK.	9	.45	7.95		13				
MATA	.5	.03	.53		1				
PLSP	.5	.03	.53		1				
Per.Forbs	.5				1	.03	.03	.06	.14
AST.	.5	.03	.53		1				
TOTAL		5.66	100.00			59.67			286.41

*Not computed in percent composition

Precipitation Data

R. G. # 16 Lower Gov't Draw Exclosure

October 15 to April 15	- 2.94
April 15 to July 1	- 5.50
July 1 to September 1	- 1.20
September 1 to October 15	- 1.27
Season Total	- 10.91
Long Term Average	- 10.00

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No.Plots 20

Cover Determined by Area Estimate

Lower Gov't Draw Inside Spray 8/24/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
AGSM	64	3.20	33.88		20	52.57	2.63	.82	252.34
ROSE	35	1.75	18.51		14	12.14	.87	.35	58.27
ARTE	44	2.20	23.28		13	17.41	1.34	.40	83.57
STCO	29	1.45	15.34		9	18.70	2.08	.64	89.76
Ann.Forbs	13.5				11	2.70	.25	.20	12.96
CHAL	3.5	0.18	1.90		7				
UNK.	4.5	0.23	2.43		5				
LEDE	3.5	0.18	1.90		7				
CAMI	1	0.05	0.53		2				
MATA	0.5	0.03	0.32		1				
PLSP	0.5	0.03	0.32		1				
Per.Forbs	3				1	2.20	2.20	.73	10.56
PEN.	3	0.15	1.59		1				
TOTAL		9.45	100.00			105.72			507.46

Precipitation Data

R. G. # 16 Lower Government Draw Exclosure

October 15 to April 15	- 2.94
April 15 to July 1	- 5.50
July 1 to September 1	- 1.20
September 1 to October 15	- 1.27
Season Total	- 10.91
Long Term Average	- 10.00

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Lower Gov't Draw Outside Non-Spray (Native) 8/24/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{1}{e} E$	Wgt./ Unit Basal Area $F \frac{1}{a} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
ARTR	368	18.40	--		10				
AGSM	19	0.95	13.80		18	19.70	1.09	1.04	94.56
POSE	79	3.95	57.40		20	11.34	0.57	0.14	54.43
STCO	20.5	1.03	14.97		9	7.21	0.80	0.35	34.61
BRTE	0.5	0.03	0.44		1	0.02	0.02	0.04	0.10
Ann.Forbs	17				18	2.22	0.12	0.13	10.66
UNK.	10	0.50	7.27		12				
LEDE	2.5	0.13	1.89		5				
CHAL	3	0.15	2.18		6				
PLSP	0.5	0.03	0.44		1				
LATE	0.5	0.03	0.44		1				
MATA	0.5	0.03	0.44		1				
Per.Forbs	1				2	0.30	0.15	0.30	1.44
SPCO	1	0.05	0.73		2				
TOTAL		6.88	100.00			40.79			193.80

*Not computed in percent composition

Precipitation Data

R. G. # 16 Lower Government Draw Exclosure

October 15 to April 15	- 2.94
April 15 to July 1	- 5.50
July 1 to September 1	- 1.20
September 1 to October 15	- 1.27
Season Total	- 10.91
Long Term Average	- 10.00

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Lower Gov't Draw Outside Spray 8/24/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
AGSM	24	1.20	12.96		18	9.91	0.55	0.41	47.57
BOSE	120	6.00	64.80		20	14.53	0.73	0.12	69.74
STCO	35	1.75	18.90		13	6.74	0.52	0.19	32.35
BRTE	3	0.15	1.62		2	1.63	0.82	0.54	7.82
Ann.Forbs	2.5				3	.31	.10	0.12	1.49
CHAL	2	0.10	1.08		3				
UNK.	0.5	0.03	0.32		1				
Per.Forbs	0.5				1	.30	.30	.60	1.44
SPCO	0.5	0.03	0.32		1				
TOTAL		9.26	100.00			33.42			160.41

Precipitation Data

R. G. # 16 Lower Government Draw Exclosure

October 15 to April 15	- 2.94
April 15 to July 1	- 5.50
July 1 to September 1	- 1.20
September 1 to October 15	- 1.27
Season Total	- 10.91
Long Term Average	- 10.00

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Lower Gov't Draw Inside Cultivated 8/24/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	16	0.80	--		2				
AGSM	36.5	1.83	56.83		20	77.82	3.89	2.13	373.54
POSE	13	0.65	20.19		12	15.87	1.32	1.22	76.18
STCO	3	0.15	4.66		1	5.54	5.54	1.85	26.59
BRTE	5	0.25	7.77		9	4.83	0.54	0.97	23.18
Ann.Forbs	6				12	0.84	0.07	0.14	4.03
UNK.	3.	0.15	4.66		6				
CHAL	1.5	0.08	2.48		3				
CAMI	1	0.05	1.55		2				
LEDE	0.5	0.03	0.93		1				
Per.Forbs	0.5				1	0.01	0.01	0.02	0.05
SPCO	0.5	0.03	0.93		1				
TOTAL		3.22	100.00			104.94			503.57

*Not computed in percent composition

Precipitation Data

R. G. # 16 Lower Government Draw Exclosure

October 15 to April 15	- 2.94
April 15 to July 1	- 5.50
July 1 to September 1	- 1.20
September 1 to October 15	- 1.27
Season Total	-10.91
Long Term Average	-10.00

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Lower Gov't Draw Inside Pitted 8/24/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{e}{c} E$	Wgt./ Unit Basal Area $F \frac{\div}{e} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
[illegible]TR	344	17.20	--		11				
AGSM	21	1.05	27.86		19	33.07	1.74	1.57	158.74
STCO	10.5	.53	14.06		3	13.69	4.56	1.30	65.71
POSE	32.5	1.63	43.21		16	18.90	1.18	.58	90.72
BRTE	2.5	.13	3.45		5	2.57	.51	1.03	12.34
AGCR	1	.05	1.33		1	3.50	3.50	3.50	16.80
Ann. Forbs	7				11	2.48	.23	.35	11.90
CHAL	2	.10	2.65		4				
LEDE	1	.05	1.33		8				
UNK.	4	.20	5.31		2				
Per. Forbs	.5				1	.15	.15	.30	.72
AST.	.5	.03	.80		1				
TOTAL		3.77	100.00			74.36			356.93

Precipitation Data

R. G. # 16 Lower Gov't Draw Exclosure

October 15 to April 15	- 2.94
April 15 to July 1	- 5.50
July 1 to September 1	- 1.20
September 1 to October 15	- 1.27
Season Total	- 10.91
Long Term Average	- 10.00

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 15

Cover Determined by Area Estimate

LU Juniper Study Area # 2 Composite of 3 Cages Clipped 8/17/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 15	Total Weight Gms/15 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{\cdot}{\cdot}$ E	Wgt./ Unit Basal Area F $\frac{\cdot}{\cdot}$ A	Pounds Per Acre F x 7.2
	A	B	C	D	E	F	G	H	I
*ARTR	109	7.27	--		11				
POA	57	3.80	42.74		14	57.42	4.10	1.01	413.42
FEID	33	2.20	24.75		12	19.25	1.60	.58	138.60
KOCR	17	1.13	12.71		13	7.17	.55	.42	51.62
AGEX	7	.47	5.29		3	8.19	2.73	1.17	58.97
AGR	11	.73	8.21		13	16.30	1.23	1.48	117.36
CAR	3.5	.23	2.59		4	1.77	.44	.51	12.74
Ann. Forbs.	1.5				3	.04	.01	.03	.29
CAMI	1.5	.10	1.12		3				
Per. Forbs.	3.5				6	3.64	.61	1.04	26.21
CEAR	1	.07	.79		2				
[illegible]MI	.5	.03	.34		1				
[illegible]K	2	.13	1.46		4				
TOTAL		8.89	100.00			113.78			819.21

*Not computed in percent composition

Precipitation Data

R. G. # 22 LU Juniper Study

October 15 to April 15	- 1.93
April 15 to July 1	- 8.00
July 1 to September 1	- 4.24
September 1 to October 15	- 2.55
Season Total	- 16.72

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

LU Juniper Study Area # 3 Composite of 3 Cages clipped 8/17/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 15	Total Weight Gms/15 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{e}{e}$ E	Wgt./ Unit Basal Area F $\frac{e}{e}$ A	Pounds Per Acre F x 7.2
	A	B	C	D	E	F	G	H	I
*ARTR	89	5.93	--		7				
FEID	35.5	2.37	20.15		15	16.98	1.13	.48	122.26
KOCR	10	.67	5.70		9	4.88	.54	.49	35.14
AGR	6	.40	3.40		11	6.80	.62	1.13	48.96
POA	93.5	6.23	52.97		15	94.01	.63	1.01	676.87
CAR	17.5	1.17	9.95		9	8.21	.91	.47	59.11
DAUN	3	.20	1.70		1	.60	.60	.20	4.32
AGEX	5	.33	2.80		3	5.52	1.84	1.10	39.74
STVI	3	.20	1.70		2	3.41	1.71	1.14	24.55
Ann. Forbs	1				2	.04	.02	.04	.29
CAMI	.5	.03	.26		1				
UNK	.5	.03	.26		1				
Per. Forbs	2				4	.39	.10	.20	2.81
IRMI	.5	.03	.26		1				
UNK	1.5	.10	.85		3				
TOTAL		11.76	100.00			140.84			1014.05

*Not computed in percent composition

Precipitation Data

R. G. # 22 LU Juniper Study

October 15 to April 15	-	1.93
April 15 to July 1	-	8.00
July 1 to September 1	-	4.24
September 1 to October 15	-	2.55
Season Total	-	16.72

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 15

Cover Determined by Area Estimate

LU Juniper Study Area # 5 Composite of 3 Cages Clipped 8/18/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 15	Total Weight Gms/15 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{\text{Gms}}{\text{Occ}}$ E	Wgt./ Unit Basal Area F $\frac{\text{Gms}}{\text{Sq.ft.}}$ A	Pounds Per Acre F x 7.2
	A	B	C	D	E	F	G	H	I
*ARTR	20.5	1.37	--		3				
POA	36	2.40	24.17		11	11.23	1.02	.34	80.86
AGSM	4	.27	2.72		5	8.64	1.73	2.16	62.21
KOCR	50	3.33	33.53		15	31.74	2.12	.63	228.53
FEID	16	1.07	10.77		6	3.36	.56	.21	24.19
CAR	10	.67	6.75		9	4.23	.47	.42	30.46
AGR	20.5	1.37	13.80		10	31.22	3.12	1.52	224.78
STVI	.5	.03	.30		1	.14	.14	.28	1.01
Ann Forbs.	3.5				6	.33	.06	.09	2.38
CAMI	2	.13	1.31		4				
UNK	1.5	.10	1.01		3				
Per.Forbs.	8.5				3	1.08	.36	.13	7.78
ANRO	8	.53	5.34		2				
UNK	.5	.03	.30		1				
TOTAL		9.93	100.00			91.97			662.20

*Not computed in percent composition

Precipitation Data

R. G. # 22 LU Juniper Study

October 15 to April 15	- 1.93
April 15 to July 1	- 8.00
July 1 to September 1	- 4.24
September 1 to October 15	- 2.55
Season Total	- 16.72

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 15

Cover Determined by Area Estimate

LU Juniper Study Area # 6 Composite of 3 Cages Clipped 8/17/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 15	Total Weight Gms/15 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{f}{e}$ E	Wgt./ Unit Basal Area F $\frac{f}{e}$ A	Pounds Per Acre F x 7.2
	A	B	C	D	E	F	G	H	I
*ARTR	297	19.80	--		12				
*ARFR	6	.40	--		1				
AGSM	20.5	1.37	19.49		15	43.11	2.87	2.10	310.39
CAR	5.5	.37	5.26		5	1.77	.35	.32	12.74
KOCR	12	.80	11.38		9	3.57	.40	.30	25.70
POA	8.5	.57	8.11		9	4.79	.53	.56	34.49
STVI	1.5	.10	1.42		2	1.85	.93	1.23	13.32
Per.Forbs.	57.5				15	22.09	1.47	.38	159.05
ACLA	3.5	.23	3.27		7				
VIAM	4	.27	3.84		8				
TAR	7.5	.50	7.11		13				
POCO	3.5	.23	3.27		6				
ANRO	23	1.53	21.76		10				
[illegible]AR	2.5	.17	2.42		2				
[illegible]FU	12	.80	11.38		4				
ALTE	.5	.03	.43		1				
UNK	.5	.03	.43		1				
PERA	.5	.03	.43		1				
*PHHO	.7	.47	--		3				
TOTAL		7.03	100.00			77.18			559.69

*Not computed in percent composition

Precipitation Data

R. G. # 22 LU Juniper Study

October 15 to April 15	- 1.93
April 15 to July 1	- 8.00
July 1 to September 1	- 4.24
September 1 to October 15	- 2.55
Season Total	- 16.72

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

McGraw Flat Inside Native 8/23/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./ Unit Basal Area F÷A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	601	30.05	--		18				
AGSM	30	1.50	19.01		19	32.79	1.73	1.09	157.39
POFE	101.5	5.08	64.38		15	31.85	2.12	0.31	152.88
POSE	21.5	1.08	13.69		11	5.40	0.49	0.25	25.92
Ann.Forbs	4.5				9	2.66	0.30	0.59	12.77
MATA	2	0.10	1.27		4				
AST.	2.5	0.13	1.65		5				
*PHHO	6	0.30	--		4				
TOTAL		7.89	100.00			72.70			348.96

*Not computed in percent composition

Precipitation Data

R. G. #14 McGraw Flat Exclosure

October 15 to April 15	- 3.04
April 15 to July 1	- 5.45
July 1 to Septmeber 1	- 1.43
September 1 to October 15	- 1.20
Season Total	- 11.12
Long Term Average	- 9.14

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

McGraw Flat Outside Native 8/23/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*CHVI	25	1.25	--		2				
*ARTR	296	14.80	--		11				
AGSM	39	1.95	25.19		19	16.94	0.89	0.43	81.31
POFE	71	3.55	45.86		16	10.20	0.64	0.14	48.96
POSE	28.5	1.43	18.48		14	4.59	0.33	0.16	22.03
Ann.Forbs	13.5				13	20.05	1.54	1.49	96.24
MATA	13.5	0.68	8.79		13				
Per.Forbs	2.5				3	1.45	0.48	0.58	6.96
ERIG.	0.5	0.03	0.39		1				
SPCO	2	0.10	1.29		2				
*PHHO	17	0.85	--		4				
TOTAL		7.74	100.00			53.23			255.50

*Not computed in percent composition

Precipitation Data

R. G. #14 McGraw Flat Exclosure

October 15 to April 15	-	3.04
April 15 to July 1	-	5.45
July 1 to September 1	-	1.43
September 1 to October 15	-	1.20
Season Total	-	11.12
Long Term Average	-	9.14

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

North Butte Relic Area 7/30/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	23	1.15	--		3				
AGSP	57	2.85	48.22		17	80.63	4.74	1.41	387.02
CAFI	18	0.90	15.23		7	4.44	.63	.25	21.31
POSE	21.5	1.08	18.27		18	5.26	.29	.24	25.25
STCO	13.5	0.68	11.51		7	8.13	1.16	.60	39.02
Ann.Forbs	3.5				5	.82	.16	.23	3.94
PLPA	1.5	0.08	1.35		3				
MATA	0.5	0.03	0.51		1				
TRI.	1.5	0.08	1.35		3				
Per.Forbs	4				5	.57	.11	.14	2.74
SPCO	3.5	0.18	3.05		5				
ALTE	0.5	0.03	0.51		1				
*PHHO	15.5	0.78	--		7				
TOTAL		5.91	100.00			99.85			379.28

*Not computed in percent composition

Precipitation Data

R. G. #79 Thermopolis Weather Bureau Station

October 15 to April 15	- 2.55
April 15 to July 1	- 5.22
July 1 to September 1	- Discontinued
September 1 to October 15	- Discontinued
Long Term Average	- 13.69

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Round Top Mountain Relic Area 7/30/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{e}{o} E$	Wgt./ Unit Basal Area $F \frac{e}{o} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR.	11	0.55	--		3				
AGSP	82.5	4.13	44.60		19	98.00	5.16	1.19	470.40
CAFI	68	3.40	36.72		16	17.65	1.10	.26	84.72
POSE	16	0.80	8.64		11	1.70	.15	.11	8.16
STCO	14	0.70	7.56		5	5.58	1.12	.40	26.78
KOCR	1	0.05	0.54		1	.20	.20	.20	.96
Ann.Forbs	.5				1	.16	.16	.32	.77
LARE	0.5	0.03	0.32		1				
Per.Forbs	3				4	1.49	.37	.50	7.15
ZYG.	3	0.15	1.62		4				
TOTAL		9.26	100.00			124.78			598.94

*Not computed in percent composition

Precipitation Data

R. G. # 79 Thermopolis Weather Bureau Station

October 15 to April 15	- 2.55
April 15 to July 1	- 5.22
July 1 to September 1	- Discontinued
September 1 to October 15	- Discontinued
Long Term Average	- 13.69

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Sand Gulch Exc. Inside Native 7/29/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{w}{c}$ E	Wgt./ Unit Basal Area F $\frac{w}{a}$ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
TNU	2253	11.27	79.31		110	830.36	7.55	.37	398.57
AGSM	259	1.30	9.15		134	299.84	2.24	1.16	143.92
BRTE	87	.44	3.10		117	135.03	1.15	1.55	64.81
BOGR	31	.16	1.13		14	8.45	.60	.27	4.06
BRJA	2.5	.01	.07		5	.13	.03	.05	.06
POSE	79	.40	2.81		36	26.43	.73	.33	12.69
SIHY	100.5	.50	3.52		38	160.49	4.22	1.60	77.04
ORHY	8	.04	.28		3	10.23	3.41	1.15	4.91
SPAI	2	.01	.07		1	1.90	1.90	.95	.91
Ann. Forbs.	11.5				21	.79	.04	.07	.38
LEDE	4.5	.02	.14		9				
ATAR	3	.02	.14		6				
PLSP	3.5	.02	.14		7				
LARE	.5	.01	.07		1				
Per. Forbs.	1				2	.16	.08	.16	.08
LTE	1	.01	.07		2				
OPPO	160	.80	--		8				
TOTAL	14.21	100.00				1473.81			707.43

*Not computed in percent composition

Precipitation Data

R. G. # 75 Sand Gulch Exc.

October 15 to April 15	-	Reset
April 15 to July 1	-	3.56
July 1 to September 1	-	.70
September 1 to October 15	-	Reset
Long Term Average	-	9.86

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 — No. Plots 20

Cover Determined by Area Estimate

Sand Gulch Exc. Outside Native 7/29/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{\circ}{\circ}$ E	Wgt./ Unit Basal Area F $\frac{\circ}{\circ}$ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	1665	8.33	69.60		123	906.26	7.37	.54	435.00
BRTE	301.5	1.51	12.62		150	267.52	1.78	.89	128.41
BOGR	246	1.23	10.28		31	51.77	1.67	.21	24.85
SIHY	25.5	.13	1.09		14	15.11	1.08	.59	7.25
POSE	16	.08	.67		14	3.51	.25	.22	1.69
MUSQ	14	.07	.59		21	2.83	.13	.20	1.36
SPCR	1	.01	.08		1	.07	.07	.07	.03
AGSM	51.5	.26	2.17		39	35.35	.91	.69	16.97
AGCR	1	.01	.08		1	.31	.31	.31	.15
Ann. Forbs.	59				77	17.87	.23	.30	8.58
LARE	12	.06	.50		24				
LEDE	4.5	.02	.17		9				
PLSP	1	.01	.08		2				
SAKA	10	.05	.42		20				
KOSC	1.5	.01	.08		3				
ATAR	29	.15	1.25		49				
MATA	1	.01	.08		2				
Per. Forbs.	3				6	.37	.06	.12	.18
SPCO	.5	.01	.08		1				
TRI	2	.01	.08		4				
ASTE	.5	.01	.08		1				
*OPPO	205	1.03	--		15				
TOTAL		11.97	100.00			1300.97			624.46

*Not composed in percent composition

Precipitation Data

R. G. # 75 Sand Gulch Exc.

October 15 to April 15	-	Reset
April 15 to July 1	-	3.56
July 1 to September 1	-	.70
September 1 to October 15	-	Reset
Long Term Average		9.86

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 — No. Plots 20

Cover Determined by Area Estimate

Sand Gulch Exc. Inside Cultivated 7/29/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{e}{c}$ E	Wgt./ Unit Basal Area F $\frac{e}{c}$ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	1249.5	6.25	67.64		120	1144.91	9.54	.92	549.56
AGEL	13	.07	.76		12	18.59	1.55	1.43	8.92
AGCR	9	.05	.54		6	40.02	6.67	4.45	19.21
POSE	85.5	.43	4.65		56	39.35	.70	.46	18.89
ORHY	13	.07	.76		5	14.66	2.93	1.13	7.04
POFE	116	.58	6.28		57	112.91	1.98	.97	54.20
BRTE	108.5	.54	5.84		64	63.35	.99	.58	30.41
SPAI	18.5	.09	.97		15	9.67	.64	.52	4.64
AGSM	183.5	.92	9.96		96	190.36	1.98	1.04	91.37
BRJA	5.5	.03	.32		5	.44	.09	.08	.21
SIHY	26	.13	1.41		15	25.13	1.68	.97	12.06
Ann. Forbs.	7				10	.47	.05	.07	.23
PLPA	1	.01	.11		1				
CAMI	2.5	.01	.11		5				
LATE	2.5	.01	.11		5				
LEDE	1	.01	.11		2				
Per. Forbs.	5.5				7	.57	.08	.10	.27
SPCO	.5	.01	.11		1				
ALTE	5	.03	.32		6				
*OPPO	242.5	1.21	--		36				
TOTAL		9.24	100.00			1660.43			797.01

*Not computed in percent composition

Precipitation Data

R. G. # 75 Sand Gulch Exc.

October 15 to April 15	-	Reset
April 15 to July 1	-	3.56
July 1 to September 1	-	.70
September 1 to October 15	-	Reset
Long Term Average	-	9.86

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATES SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Sand Gulch Exc. Inside Pitted 8/17/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{c}{e}$ E	Wgt./ Unit Basal Area F $\frac{c}{e}$ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	1066.5	5.33	73.82		137	679.41	4.96	.64	326.12
AGSM	179.5	.80	11.08		117	198.36	1.70	1.11	95.21
POSE	103.5	.52	7.20		95	59.51	.63	.57	28.56
AGCR	10	.05	.69		10	19.49	1.95	1.95	9.31
BOGR	32.5	.16	2.22		10	18.49	1.85	.57	8.88
ORHY	34	.17	2.36		12	60.25	5.02	1.77	28.92
SIHY	8.5	.04	.55		6	9.33	1.56	1.10	4.48
BRTE	10	.05	.69		20	1.55	.08	.16	.74
STCO	14	.07	.97		5	12.50	2.50	.89	6.00
Ann. Forbs.	1.5				3	.02	.01	.01	.01
UNK	1.5	.01	.14		3				
Per. Forbs.	4				7	.90	.13	.23	.43
ALTE	4	.02	.28		7				
*OPPO	122	.61	--		10				
TOTAL		7.22	100.00			1059.81			508.71

*Not computed in percent composition

Precipitation Data

R. G. # 75 Sand Gulch Exc.

October 15 to April 15	-	Reset
April 15 to July 1	-	3.56
July 1 to September 1	-	.70
September 1 to October 15	-	Reset
Long Term Average	-	9.86

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 40

Cover Determined by Area Estimate

Shoshoni Ant Study Area #2 0# Mirex /Acre Non-grazed 8/26/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 40	Total Weight Gms/40c²/sq.ft.	Average Weight Per Plot Occurrences F÷E	Wgt./Unit Basal Area F÷A	Pounds Per Acre F x 2.4
	A	B	C	D	E	F	G	H	I
*ARTR	278	6.95	--		13				
POSE	25.5	0.64	6.97		20	4.54	0.23	0.18	10.90
AGSM	3.5	0.09	0.98		5	1.82	0.36	0.52	4.37
BOGR	327	8.18	89.10		24	60.95	2.54	0.19	146.28
STCO	7.5	0.19	2.07		4	8.45	2.11	1.13	20.28
SIHY	1	0.03	0.33		1	1.09	1.09	1.09	2.62
Per.Forbs	2				4	0.41	0.10	0.21	0.98
ALTE	.5	0.01	0.11		1				
ERPU	.5	0.01	0.11		1				
SPCO	1	0.03	0.33		2				
*OPPO	187	4.68	--		8				
TOTAL		9.18	100.00			77.26			185.43

*Not computed in percent composition

Precipitation Data

R. G. #48 Fuller Seed Plot

October 15 to April 15	-	2.00
April 15 to July 1	-	3.39
July 1 to September 1	-	0.91
September 1 to October 15	-	0.88
Season Total	-	7.18
Long Term Average	-	8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 40

Cover Determined by Area Estimate

Shoshoni Ant Study Area #4 5#Mirex/A Non-grazed 8/26/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 40	Total Weight Gms/40 /sq.ft.	Average Weight per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 2.4
	A	B	C	D	E	F	G	H	I
*ARTR	108	2.70	--		7				
ROSE	20	0.50	6.24		13	4.36	0.34	0.22	10.46
AGSM	8.5	0.21	2.62		11	4.77	0.43	0.56	11.45
BOGR	272.5	6.81	84.92		23	48.82	2.12	0.18	117.17
STCO	8	0.20	2.49		5	3.97	0.79	0.50	9.53
ORHY	5	0.13	1.62		1	5.83	5.83	1.17	13.99
Ann.Forbs	0.5				1	0.10	0.10	0.20	0.24
LEDE	0.5	0.01	0.12		1				
Per.Forbs	6.5				11	1.52	0.14	0.23	3.65
SPCO	6	0.15	1.87		10				
ERPU	0.5	0.01	0.12		1				
*OPPO	128	3.20	--		6				
TOTAL		8.02	100.00			69.37			166.49

*Not computed in percent composition

Precipitation Data

R. G. # 48 - Fuller Seed Plot

October 15 to April 15	- 2.00
April 15 to July 1	- 3.39
July 1 to September 1	- 0.91
September 1 to October 15	- 0.88
Season Total	- 7.18
Long Term Average	- 8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 40

Cover Determined by Area Estimate

Shoshoni Ant Study Area #7 5# Mirex /Acre Non-grazed 8/26/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 40	Total Weight Gms/40 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{\%}{\%}$ E	Wgt./ Unit Basal Area F $\frac{\%}{\%}$ A	Pounds Per Acre F x 2.4
	A	B	C	D	E	F	G	H	I
*ARTR	344	8.60	--		21				
POSE	30	0.75	20.55		16	3.81	0.24	0.13	9.14
AGSM	19.5	0.49	13.43		27	15.72	0.58	0.81	37.73
BOGR	87.5	2.19	60.00		8	9.30	1.16	0.11	22.32
STCO	7	0.18	4.93		4	5.83	1.45	0.83	13.99
Ann.Forbs	0.5				1	0.17	0.17	0.34	0.41
LEDE	0.5	0.01	0.27		1				
Per.Forbs	1.5				2	0.31	0.16	0.21	0.74
ALTE	1	0.02	0.55		2				
SPCO	0.5	0.01	0.27		1				
*OPPO	64	1.60	--		5				
TOTAL		3.65	100.00			35.14			84.33

*Not computed in percent composition

Precipitation Data

R. G. #48 Fuller Seed Plot

October 15 to April 15	-	2.00
April 15 to July 1	-	3.39
July 1 to September 1	-	0.91
September 1 to October 15	-	0.88
Season Total	-	7.18
Long Term Average	-	8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 40

Cover Determined by Area Estimate

Shoshoni Ant Study Area #8 0# Mirex /Acre Non-grazed 8/26/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 40	Total Weight Gms/40 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{b}{c} E$	Wgt./ Unit Basal Area $F \frac{e}{d} A$	Pounds Per Acre F x 2.4
	A	B	C	D	E	F	G	H	I
*ARTR	169		--		9				
POSE	16.5	0.41	6.33		16	2.90	0.18	0.17	6.96
AGSM	21	0.53	8.18		21	14.54	0.69	0.69	34.90
BOGR	202.5	5.06	78.10		19	47.57	2.50	0.23	114.17
STCO	18	0.45	6.94		7	8.99	1.28	0.50	21.58
Ann.Forbs	0.5				1	0.05	0.05	0.10	0.12
LEDE	0.5	0.01	0.15		1				
Per.Forbs	1				2	0.32	0.16	0.32	0.77
ALTE	0.5	0.01	0.15		1				
SPCO	0.5	0.01	0.15		1				
*OPPO	107	2.68	--		5				
TOTAL		6.48	100.00			74.37			178.50

*Not computed in percent composition

Precipitation Data

R. G. #48 Fuller Seed Plot

October 15 to April 15	-	2.00
April 15 to July 1	-	3.39
July 1 to September 1	-	0.91
September 1 to October 15	-	0.88
Season Total	-	7.18
Long Term Average	-	8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 40

Cover Determined by Area Estimate

Shoshoni Ant Study Area #9 2½#Mirex/A Non-grazed 8/26/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 40	Total Weight Gms/40 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 2.4
	A	B	C	D	E	F	G	H	I
*ARTR	189	4.73	--		16				
POSE	17	0.43	9.98		14	3.34	0.24	0.20	8.02
AGSM	25	0.63	14.62		24	16.43	0.68	0.65	39.43
BOGR	124.5	3.11	72.15		15	19.59	1.31	0.16	47.02
STCO	3	0.08	1.86		2	1.62	0.81	0.54	3.89
CAEL	1.5	0.04	0.93		2	0.41	0.21	0.27	0.98
Per.Forbs	1				2	0.19	0.10	0.19	0.46
ALTE	0.5	0.01	0.23		1				
SPCO	0.5	0.01	0.23		1				
*OPPO	82	2.05	--		7				
TOTAL		4.31				41.58			99.80

*Not computed in percent composition

Precipitation Data

R. G. #48 - Fuller Seed Plot

October 15 to April 15	- 2.00
April 15 to July 1	- 3.39
July 1 to September 1	- 0.91
September 1 to October 15	- 0.88
Season Total	- 7.18
Long Term Average	- 8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 40

Cover Determined by Area Estimate

Shoshoni Ant Study Area #11 2½# Mirex /Acre Non-grazed 8/26/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 40	Total Weight Gms/40 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{F}{G} E$	Wgt./ Unit Basal Area $F \frac{B}{C} A$	Pounds Per Acre F x 2.4
	A	B	C	D	E	F	G	H	I
*ARTR	157	3.93	--		11				
POSE	34	0.85	14.65		17	6.91	0.41	0.20	16.58
AGSM	18	0.45	7.76		15	9.68	0.65	0.54	23.23
BOGR	174	4.35	75.00		22	29.27	1.33	0.17	70.25
STCO	1	0.03	0.52		1	0.26	0.26	0.26	0.62
Ann.Forbs	3.5				7	1.78	0.25	0.51	4.27
LEDE	3.5	0.09	1.55		7				
Per.Forbs	1				2	0.22	0.11	0.22	0.53
SPCO	1	0.03	0.52		2				
*PHHO	1	0.03	--		1				
*OPPO	136	3.40	--		6				
TOTAL		5.80	100.00			48.12			115.48

*Not computed in percent composition

Precipitation Data

R. G. #48 Fuller Seed Plot

October 15 to April 15	-	2.00
April 15 to July 1	-	3.39
July 1 to September 1	-	0.91
September 1 to October 15	-	0.88
Season Total	-	7.18
Long Term Average	-	8.21

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Smilo Exc. Inside Non-Spray 10/20/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F E	Wgt./ Unit Basal Area F A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	126.00	6.30	--		8				
POPE	12.50	.63	26.14		16	2.84	1.78	.23	13.63
BOGR	15.0	.75	31.14		5	3.48	6.96	.23	16.70
SIHY	5.5	.28	11.62		3	7.80	2.60	1.42	37.44
STCO	0.5	.03	1.24		1	2.04	2.04	4.08	9.79
AGSM	8.5	.43	17.84		10	9.81	.98	1.15	47.09
FEOC	0.5	.03	1.24		1	.01	.01	.02	.05
Ann.Forbs.	5.0				10	1.00	.10	.20	4.80
CORA	0.5	.03	1.24		1				
PLPA	4.5	.23	9.54		9				
TOTAL		6.88	100.00			40.79			195.80

*Not computed in percent composition

Precipitation Data

R. G. # 36 Smilo Exc.

October 15 to April 15	-	1.94
April 15 to July 1	-	2.34
July 1 to September 1	-	0.58
September 1 to October 15	-	1.07
Season Total	-	5.93
Long Term Average	-	8.46

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Smilo Exc. Inside Spray 10/20/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{e}{c}$ E	Wgt./ Unit Basal Area F $\frac{e}{a}$ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
AGSM	18.0	.90	24.52		12	27.30	2.28	1.52	131.04
POSE	19.0	.95	25.89		18	11.03	0.61	0.58	52.94
SIHY	11.5	.58	15.80		7	18.56	2.65	1.61	89.09
STCO	8.5	.43	11.72		4	20.61	5.15	2.42	98.93
FEOC	3.0	.15	4.09		6	0.07	0.01	0.02	0.34
BRTE	5.0	.25	6.81		10	4.67	0.47	0.93	22.42
BOGR	5.5	.28	7.63		2	2.09	1.05	0.38	10.03
Ann. Forbs.	2.5				5	0.36	0.07	0.14	1.73
PLPA	2	.10	2.72		4				
CORA	0.5	.03	0.82		1				
*OPPO	50.5	2.53	--		3				
TOTAL		3.67	100.00			84.69			406.52

*Not computed in percent composition

Precipitation Data

R. G. # 36 Smile Exc.

October 15 to April 15	-	1.94
April 15 to July 1	-	2.34
July 1 to September 1	-	0.58
September 1 to October 15	-	1.07
Season Total	-	5.93
Long Term Average	-	8.46

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOT LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Smilo Exc. Outside Non-Spray 7/31/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	120	6.00	--		8				
SPCO	1	0.05	1.24		2	0.60	0.30	0.60	2.88
POSE	30.5	1.53	37.87		18	9.34	0.52	0.31	44.83
AGSM	7.5	0.38	9.41		11	7.34	0.67	0.98	35.23
SIHY	2	0.10	2.48		3	1.01	0.34	0.51	4.85
BOGR	33	1.65	40.83		2	6.06	3.03	0.18	29.09
BRTE	0.5	0.03	0.74		1	0.10	0.10	0.20	0.48
Ann. Forbs	6				12	1.91	0.16	0.32	9.17
PLPA	6	0.30	7.43		12				
*OPPO	19.5	0.98	--		5				
TOTAL		4.04	100.00			26.36			126.53

*Not computed in percent composition

Precipitation Data

R. G. # 36 Smilo Exc.

October 15 to April 15	-	1.94
April 15 to July 1	-	2.34
July 1 to September 1	-	0.58
September 1 to October 15	-	1.07
Season Total	-	5.93
Long Term Average	-	8.46

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Smilo Exc. Outside Spray 10/20/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{F}{E} E$	Wgt./ Unit Basal Area $F \frac{F}{B} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
AGSM	11.0	.55	14.36		15	16.88	1.13	1.53	81.02
[illegible]	24.5	1.23	32.10		18	7.66	.43	.31	36.77
BRTE	10.5	.53	13.84		18	11.71	.65	1.21	56.21
SIHY	9.5	.48	12.53		9	10.15	1.13	1.07	48.72
FEOC	1.0	.05	1.31		2	.12	.06	.12	.58
STCO	6.5	.33	8.62		2	10.40	5.20	1.60	49.92
Ann. Forbs.	13.0				13	7.45	.57	.57	35.76
PLPA	7.0	.35	9.14		13				
CHAL	0.5	.03	0.78		1				
SAKA	3.0	.15	3.92		6				
UNK	1.5	.08	2.09		3				
LARE	1.0	.05	1.31		2				
TOTAL		3.83	100.00			64.37			308.98

Precipitation Data

R. G. # 16 Smilo Exc.

October 15 to April 15	-	1.94
April 15 to July 1	-	2.34
July 1 to September 1	-	0.58
September 1 to October 15	-	1.07
Season Total	-	5.93
Long Term Average	-	8.46

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Sweetwater Inside 8/3/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{e}{c} E$	Wgt./ Unit Basal Area $F \frac{e}{c} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	262	13.10	--		7				
*CHNA	48	2.40	--		5				
AGSM	9	.45	6.64		13	4.00	.31	.44	19.20
CAFI	26	1.30	19.18		10	3.85	.39	.15	18.48
POSE	18.5	.93	13.72		16	4.71	.29	.25	22.61
KOCR	10	.50	7.38		9	3.31	.37	.33	15.89
STCO	56	2.80	41.27		17	24.92	1.47	.45	119.61
CAEL	5	.25	3.69		6	1.01	.17	.20	4.85
Per.Forbs	11				4	1.83	.46	.17	8.78
LEPU	6	.30	4.43		3				
ALTE	1	.05	.74		2				
SPCO	1	.05	.74		1				
AST.	3	.15	2.21		1				
*PHHO	8	.40	--		2				
TOTAL		6.78	100.00			43.63			209.42

*Not computed in percent composition

Precipitation Data

R. G. # 11 Sweetwater Exclosure

October 15 to April 15	- Reset
April 15 to July 1	- 3.00
July 1 to September 1	- 2.27
September 1 to October 15	- 1.85

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Sweetwater Exclosure Outside 8/3/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt / Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	195	9.75	--		8				
*CHVI	41.5	2.08	--		5				
*CHNA	10	.50	--		1				
AGSM	22.5	1.13	14.71		17	11.26	.66	.50	54.05
POSE	72	3.60	46.88		18	9.97	.55	.14	47.86
STCO	10	.50	6.51		6	3.83	.64	.38	18.38
KOCR	6	.30	3.91		4	1.85	.46	.31	8.88
CAEL	17	.85	11.07		10	5.18	.52	.30	24.86
CAFI	23.5	1.18	15.36		8	4.08	.51	.17	19.58
Ann.Forbs	1				2	.02	.01	.02	.10
EUSE	.5	.03	.39		1				
CHAL	.5	.03	.39		1				
Per.Forbs	1				2	.40	.20	.40	1.92
SPCO	.5	.03	.39		1				
ALTE	.5	.03	.39		1				
*OPPO	5	.25	--		1				
*PHHO	7	.35	--		3				
TOTAL		7.68	100.00			36.59			175.63

*Not computed in percent composition

Precipitation Data

R. G. # 11 Sweetwater Exclosure

October 15 to April 15	- Reset
April 15 to July 1	- 3.00
July 1 to September 1	- 2.27
September 1 to October 15	- 1.85

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Two-Mile Hill Exc. Inside Native 7/21/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{a}{c} E$	Wgt./ Unit Basal Area $F \frac{a}{b} A$	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
[illegible]NU	912.5	4.56	72.61		123	759.84	6.18	.83	364.72
[illegible]TE	171	.86	13.69		178	214.70	1.21	1.26	103.06
POSE	8	.04	.64		12	1.59	.13	.20	.76
ORHY	20.5	.10	1.59		11	72.37	6.58	3.53	34.74
BRJA	2.5	.01	.16		5	.69	.14	.28	.33
SIHY	1.5	.01	.16		2	.81	.41	.54	.39
Ann. Forbs.	121				144	83.85	.58	.69	40.25
LATE	40	.20	3.18		79				
LEDE	19.5	.10	1.59		41				
MATA	47	.24	3.82		62				
UNK	6	.03	.48		11				
CHAL	.5	.01	.16		1				
PLPA	.5	.01	.16		1				
LAC	7.5	.04	.64		9				
Per. Forbs.	13				22	3.35	.15	.26	1.61
TRDU	.5	.01	.16		1				
ALTE	4	.02	.32		7				
[illegible]DI	2.5	.01	.16		3				
ASTE	4.5	.02	.32		7				
VINU	1.5	.01	.16		2				
*ARE	3.5	.02	--		6				
*PHHO	3	.02	--		1				
*OPPO	31	.16	--		7				
TOTAL		6.28	100.00			1137.20			545.86

*Not computed in percent composition

Precipitation Data

R. G. # 39 Two Mill Hill Exc.

October 15 to April 15	-	3.51
April 15 to July 1	-	3.02
July 1 to September 1	-	.80
September 1 to October 15	-	1.16
Season Total	-	8.49
Long Term Average	-	10.90

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Two-Mile Hill Exc. Outside Native 6/20/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{c}{e} E$	Wgt./ Unit Basal Area $F \frac{c}{e} A$	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ARTR	5	.03	--		1				
ATNU	1409	7.05	79.40		130	988.21	7.60	.70	474.34
BRTE	175	.88	9.91		187	154.68	.83	.88	74.25
POSE	60	.30	3.38		51	6.33	.12	.11	3.04
BRJA	1	.01	.11		2	.29	.15	.29	.14
SIHY	4	.02	.23		3	1.90	.63	.48	.91
ORHY	3	.02	.23		3	.90	.30	.30	.43
STCO	1	.01	.11		1	.02	.02	.02	.01
Ann. Forbs	107.5				132	46.11	.35	.43	22.13
LATE	45	.23	2.59		88				
MATA	39	.20	2.25		50				
CHAL	.5	.01	.11		1				
PLSP	3.5	.02	.23		6				
LEDE	17.5	.09	1.01		32				
DEPI	1.5	.01	.11		3				
UNK	2.5	.01	.11		5				
Per. Forbs	2.5				4	.45	.11	.18	.22
ASTE	1	.01	.11		1				
MUDI	.5	.01	.11		1				
*ARE	1	.01	--		2				
*OPPO	87	.44	--		9				
TOTAL		8.88	100.00		1198.89				575.47

Precipitation Data

R. G. # 39 Two-Mile Hill Exc.

October 15 to April 15	- 3.51
April 15 to July 1	- 3.02
July 1 to September 1	- .80
September 1 to October 15	- 1.16
Season Total	- 8.49
Long Term Average	- 10.90

*Not computed in percent composition

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Two-Mile Hill Exc. Inside Cultivated 7/26/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
[illegible]NU	653	3.27	60.78		129	868.51	6.73	1.33	416.88
MAGL	12	.06	1.11		1	14.12	14.12	1.18	6.78
POSE	78.5	.39	7.25		52	41.29	.79	.53	19.82
BRJA	215.5	1.08	20.07		173	283.54	1.64	1.32	136.10
ORHY	48.5	.24	4.46		12	134.42	11.20	2.77	64.52
AGSP	15.5	.08	1.49		6	31.90	5.32	2.06	15.31
BRTE	2	.01	.19		4	.67	.17	.34	.32
STHY	27	.14	2.60		17	35.81	2.12	1.33	17.19
Ann. Forbs.	14				25	4.30	.17	.31	2.06
MATA	2.5	.01	.19		3				
LATE	11.5	.06	1.11		22				
Per. Forbs.	5.5				10	1.60	.16	.29	.77
VINU	1.5	.01	.19		2				
ALTE	3	.02	.37		6				
MUDI	1	.01	.19		2				
[illegible]HHO	17	.09	--		6				
TOTAL		5.38	100.00			1416.16			679.75

*Not computed in percent composition

Precipitation Data

R. G. # 39 Two-Mile Hill Exc.

October 15 to April 15	3.51
April 15 to July 1	3.02
July 1 to September 1	- .80
September 1 to October 15	- 1.16
Season Total	- 8.49
Long Term Average	- 10.90

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 No. Plots 20

Cover Determined by Area Estimate

Two-Mile Hill Exc. Inside Pitted 7/22/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
TNU	673	3.37	49.05		111	660.45	5.95	.98	317.01
BRTE	106.5	.53	7.71		120	94.35	.79	.89	45.29
BRJA	164.5	.82	11.94		156	135.17	.87	.82	64.88
AGSP	87	.44	6.40		30	114.85	3.83	1.32	55.13
AGSM	3.5	.02	.29		3	4.11	1.37	1.17	1.97
POSE	143.5	.72	10.48		53	54.42	1.03	.38	26.12
ORHY	41	.21	3.06		10	98.62	9.86	2.41	47.34
SIHY	89.5	.45	6.55		40	111.60	2.79	1.25	53.57
Ann. Forbs.	45				65	22.79	.35	.51	10.94
MATA	18	.09	1.31		25				
LATE	22	.11	1.60		43				
LEDE	4.5	.02	.29		9				
LAC	.5	.01	.15		1				
Per. Forbs.	15				20	1.95	.98	.13	.94
ALTE	3.5	.02	.29		5				
TNU	10	.05	.73		12				
MUDI	1.5	.01	.15		3				
*PHHO	11.5	.06	----		5				
TOTAL		6.87	100.00			1298.31			623.19

*Not computed in percent composition

Precipitation Data

R. G. # 39 Two Mile Hill Exc.

October 15 to April 15	- 3.51
April 15 to July 1	- 3.02
July 1 to September 1	- .80
September 1 to October 15	- 1.16
Season Total	- 8.49
Long Term Average	- 10.90

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Upper Gov't Draw Inside Non-Spray (Native) 8/23/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F $\frac{f}{p}$ E	Wgt./ Unit Basal Area F $\frac{p}{a}$ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	455	22.75	--		15				
AGSM	30.5	1.53	38.34		19	22.64	1.19	0.74	108.67
POSE	32	1.60	40.12		19	7.45	0.39	0.23	35.76
KOCR	13.5	0.68	17.04		8	7.06	0.88	0.52	33.89
STCO	1	0.05	1.25		1	0.20	0.20	0.20	0.96
Ann.Forbs	1				2	0.35	0.18	0.35	1.68
UNK.	1	0.05	1.25		2				
Per.Forbs	1.5				3	0.50	0.17	0.33	2.40
ALTE	1	0.05	1.25		2				
MUDI	0.5	0.03	0.75		1				
*PHHO	29	1.45	--		12				
TOTAL		3.99	100.00			38.20			183.36

*Not computed in percent composition

Precipitation Data

R. G. # 9 - Upper Government Draw Exclosure

October 15 to April 15	- 0.52
April 15 to July 1	- 4.45
July 1 to September 1	- 1.26
September 1 to October 15	- 1.40
Season Total	- 7.63
Long Term Average	- 7.69

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Upper Gov't Draw Outside Non-spray (Native) 8/23/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences $F \frac{F}{a} E$	Wgt./ Unit Basal Area $F \frac{F}{a} A$	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	157	7.85	--		8				
AGSM	45	2.25	43.19		20	22.21	1.11	.49	106.61
POSE	53	2.65	50.85		19	7.35	.39	.14	35.28
KOCR	3	.15	2.88		3	.83	.28	.28	3.98
Ann.Forbs	.5				1	.01	.01	.02	.05
PLSP	.5	.03	.58		1				
Per.Forbs	2.5				3	.47	.16	.19	2.26
SPCO	2	.10	1.92		3				
UNK.	.5	.03	.58		1				
*PHHO	21	1.05	--		9				
*OPPO	3	.15	--		1				
TOTAL		5.21	100.00			30.87			148.18

*Not computed in percent composition

Precipitation Data

R. G. #9 - Upper Government Draw Exclosure

October 15 to April 15	- 0.52
April 15 to July 1	- 4.45
July 1 to September 1	- 1.26
September 1 to October 15	- 1.40
Season Total	- 7.63
Long Term Average	- 7.69

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Upper Gov't Draw Outside Spray 8/23/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	5	.25	--		2				
AGSM	69	3.45	33.63		20	29.65	1.48	.43	142.32
POSE	96	4.80	46.79		20	15.17	.76	.16	72.82
STCO	15	.75	7.31		4	9.11	2.28	.61	43.73
POFE	2	.10	..97		1	.80	.80	.40	3.84
KOCR	22	1.10	10.72		15	8.22	.55	.37	39.45
Ann.Forbs	.5				1	.10	.10	.20	.48
UNK.	.5	.03	.29		1				
Per.Forbs	.5				1	.15	.15	.30	.72
ALTE	.5	.03	.29		1				
*PHHO	5	.25	--		3				
TOTAL		10.26	100.00			63.20			303.36

*Not computed in percent composition

R. G. # 9

Precipitation Data

Upper Government Draw Exclosure

October 15 to April 15	- 0.52
April 15 to July 1	- 4.45
July 1 to September 1	- 1.26
September 1 to October 15	- 1.40
Season Total	- 7.63
Long Term Average	- 7.69

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Upper Gov't Draw Inside Cultivated 8/23/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	137	6.85	--		9				
AGSM	24.5	1.23	34.85		19	36.95	1.96	1.51	177.36
POSE	32.5	1.63	46.17		18	8.08	0.45	0.25	38.78
STCO	2	0.10	2.83		3	3.87	1.29	1.94	18.58
KOCR	4.5	0.23	6.52		4	5.12	1.28	1.14	24.58
Ann.Forbs	1.0				2	0.10	0.05	0.10	0.48
PLPA	0.5	0.03	0.85		1				
MATA	0.5	0.03	0.85		1				
Per.Forbs	5.5				8	1.86	0.23	0.34	8.93
ERI.	2	0.10	2.83		4				
PEN.	0.5	0.03	0.85		1				
SPCO	2	0.10	2.83		4				
ALTE	1	0.05	1.42		2				
*PHHO	9	0.45	--		7				
TOTAL		3.53	100.00			55.98			268.71

*Not computed in percent composition

Precipitation Data

R. G. # 9 Upper Government Draw Exclosure

October 15 to April 15	- 0.52
April 15 to July 1	- 4.45
July 1 to September 1	- 1.26
September 1 to October 15	- 1.40
Season Total	- 7.63
Long Term Average	- 7.69

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Upper Gov't Draw Inside Pitted 8/23/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 20	Total Weight Gms/20 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x 4.8
	A	B	C	D	E	F	G	H	I
*ARTR	176	8.80	--		7				
AGSM	36	1.80	55.39		20	55.61	2.78	1.54	266.93
POSE	21.5	1.08	33.23		13	6.99	0.54	0.33	33.55
AGCR	1.5	0.08	2.46		2	0.48	0.24	0.32	2.30
Ann.Forbs	0.5				1	0.40	0.40	0.80	1.92
MATA	0.5	0.03	0.92		1				
Per.Forbs	5				6	1.81	0.30	0.36	8.69
ALTE	2	0.10	3.08		4				
ERI.	2	0.10	3.08		4				
UNK.	0.5	0.03	0.92		1				
SPCO	0.5	0.03	0.92		1				
*PHHO	8.5	0.43	--		5				
TOTAL		3.25	100.00			65.29			313.39

*Not computed in percent composition

Precipitation Data

R. G. # 9 Upper Gov't Draw Exclosure

October 15 to April 15	- 0.52
April 15 to July 1	- 4.45
July 1 to September 1	- 1.26
September 1 to October 15	- 1.40
Season Total	- 7.63
Long Term Average	- 7.69

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 — No. Plots 20

Cover Determined by Area Estimate

West Pasture Exclosure Inside 2/12/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	881.5	4.41	68.58		122	440.93	3.61	.50	211.65
ARPE	22	.11	1.71		3	18.10	6.03	.82	8.69
ARSP	55.5	.28	4.35		8	16.27	2.03	.29	7.81
SIHY	36.5	.18	2.80		23	30.23	1.31	.83	14.51
SFCR	6.5	.03	.47		5	2.27	.45	.35	1.09
POSE	121.5	.61	9.49		56	43.56	.78	.36	20.91
ORHY	29.5	.15	2.33		19	31.10	1.64	1.05	14.93
Ann. Forbs	120.5				104	62.51	.60	.52	30.00
MATA	94	.47	7.31		92				
PLPA	15	.08	1.24		24				
LARE	2	.01	.16		4				
LEDE	8.5	.04	.62		16				
EUSE	1	.01	.16		2				
Per. Forbs	10.5				19	5.42	.29	.52	2.60
MUDI	6	.03	.47		12				
ALTE	4.5	.02	.31		8				
*OPPO	104.5	.52	--		34				
TOTAL		6.43	100.00			650.39			312.19

*Not computed in percent composition

Precipitation Data

R. G. # 13 West Pasture Exclosure

October 15 to April 15	- 2.15
April 15 to July 1	- 1.80
July 1 to September 1	- .85
September 1 to October 15	- .75
Season Total	- 5.55
Long Term Average	- 6.54

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 10 — No. Plots 20

Cover Determined by Area Estimate

West Pasture Exclosure Outside 7/13/65	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Average Height in cm.	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /sq.ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ A	Pounds Per Acre F x .48
	A	B	C	D	E	F	G	H	I
ATNU	557.5	2.79	54.18		108	296.38	2.74	.53	142.26
ARSP	14.5	.07	1.36		7	12.27	1.75	.85	5.89
ARPE	33	.17	3.30		15	38.12	2.54	1.16	18.30
SPCR	20.5	.10	1.94		18	9.75	.54	.48	4.68
SIHY	26.5	.13	2.52		23	44.25	1.92	1.67	21.24
ORHY	76	.38	7.38		52	54.25	1.04	.71	26.04
POSE	189.5	.95	18.46		77	66.86	.87	.35	32.09
Ann.Forbs	63.5				77	56.25	.73	.89	27.00
PLPA	6.5	.03	.58		13				
MATA	51.5	.26	5.05		68				
LEDE	3.5	.02	.39		7				
LARE	1.5	.01	.19		3				
EUSE	.5	.01	.19		1				
Per.Forbs	44				73	37.06	.51	.84	17.79
MUDI	24	.12	2.33		45				
ALTE	19.5	.10	1.94		36				
AST.	.5	.01	.19		1				
*OPPO	143	.72	--		36				
TOTAL		5.15	100.00			615.19			295.29

*Not computed in percent composition

Precipitation Data

R. G. # 13 West Pasture Exclosure

October 15 to April 15	- 2.15
April 15 to July 1	- 1.80
July 1 to September 1	- .85
September 1 to October 15	- .75
Season Total	- 5.55
Long Term Average	- 6.54

SECTION IV

SOIL MOISTURE AND TEMPERATURE STUDIES
1965

Introduction

Studies to evaluate soil moisture and temperature characteristics as influenced by sagebrush control and livestock grazing were initiated in 1963. Soil moisture was determined by use of a neutron scattering meter. Permanent metal access tubes, two inches in diameter, were set into the ground to a depth of five feet. The neutron probe measures the amount of water in the soil through an area of about four feet in diameter. Soil temperatures were measured with thermister probes placed at 8, 15, and 22 inches below the surface. Lead cables from the buried sensitive elements were connected to a meter for an instantaneous reading of temperature. Surface temperatures were read with a portable probe.

1965 Results

Soil moisture and temperature data were collected on eight dates during 1965 in the Smilo and Granite Mountain exclosures and on four dates in the Cumberland #1 and Cumberland #4 exclosures. The data are presented in Tables 1-5. Analysis of data is conducted with the aid of the University's electronic computer.

A paper was prepared for presentation at the X International Grassland Congress in Helsinki, Finland, in July, 1966. The title of the paper is "Soil moisture and temperature characteristics as related to grass production following shrub control under grazed and non-grazed conditions." Exerpts from the paper are presented below:

Discussion: It is apparent that non-grazing and sagebrush control treatments result in similar vegetative responses. Greatest response to cessation of livestock utilization occurs on rangeland in poorest condition relative to climax composition. Response to sagebrush control is analagous except on sites where condition has deteriorated to such an extent that insufficient native vegetation remains for re-establishment of formerly abundant species. In actuality this situation may ensue under intensive grazing pressure as well.

Soil temperature variation is influenced primarily by characteristics of soil moisture, environmental temperature, and heat interception. Since the decreased soil moisture content in the sprayed and non-grazed sites of the Granite Mountain Exclosure tends to disqualify the general concept of temperature decrease with moisture increase other factors must be responsible for the lower temperatures in the sprayed areas. Basal area of understory species increased more than two-fold during the four years of study. During the first two years greatest increase was exhibited by *Poa secunda*, a short-leaved, early-maturing species. Basal area of *Agropyron smithii* increased more slowly as did other decreaser species which provide much

more ground cover per unit of basal area than *P. secunda*. Thus the decreased soil temperature associated with sagebrush control must be related to light and heat interception by herbaceous vegetation. This concept has been examined by Geiger (1957) (1) but few would extrapolate his work to the rather sparse and diminutive vegetation of the northern cold deserts.

Robertson (1947) (4) indicated that soil moisture increased under sagebrush control but Hutchison (1956) (2) found the opposite. Both men were probably correct in conceptual application to the areas in which their work was conducted. The present study shows two kinds of conditions. On the Granite Exclosure soil moisture was much less under sagebrush control and non-use, but little variation was noted at the Smilo Exclosure except for a slight tendency of more soil moisture in the sprayed and non-grazed sites. Crown cover of big sagebrush on the two areas was similar (approximately 15 percent) but individual bushes were much more robust at the Granite Exclosure.

At the Smilo Exclosure the more arid climate, associated with sandier soils, resulted in greater restriction to vegetative potential although species composition was similar. Below average precipitation during the study at the Granite Exclosure resulted in the degree of variation in soil moisture as influenced by treatment. Increased herbage production and basal area innately require greater amounts of water. Sagebrush removal liberates soil moisture, but the key to the problem can be found in the work of Prill (1965) (3) in which he found grasses, as compared to sagebrush, able to utilize more of the soil moisture. It is generally recognized that sagebrush is a wasteful and rapid user of available moisture but grasses are able to withdraw more from the soil.

Soil moisture differences between the two study areas are thus a result of climatic variation and variation in rate of vegetative rehabilitation. At the Granite Mountain Exclosure understory vegetation was able to increase sufficiently following sagebrush removal to utilize more of the soil moisture than existing vegetation, including sagebrush, under the native non-grazed condition. At the Smilo Exclosure rigid climatic characteristics did not allow sufficient revegetation for effective utilization of released soil moisture following sagebrush control.

Conclusion: Big sagebrush and livestock grazing cause suppression of understory herbage. In addition to physical influence grass production is limited by characteristics of precipitation, soil moisture, and soil temperature. Following sagebrush control grass production is increased by moisture release and restricted by environmental limitations which are exhibited primarily by the amount of growing season precipitation, soil temperature, and air temperature near the ground surface. On a mesic site herbage may be able to increase sufficiently to actually utilize more of the soil moisture than was possible prior to sagebrush control. On a xeric site herbage increase may be limited by environmental characteristics to such an extent that the greater amounts of understory species are unable to utilize the soil moisture released from use by sagebrush.

Bibliography

1. Geiger, R. 1957. Climate near the ground. Cambridge, Mass., Harvard Univ. Press. 494 pp.

2. Hutchison, B. A. 1965. U. S. Forest Service, R. Note RM 46. 7 pp.

3. Prill, R. C. 1965. Geol. Soc. Amer., Proc. 1965. Ann. Meeting. p. 129.

4. Robertson, J. H. 1947. Ecol. 38:1-16.

Table 1. Granite Mountain Exclosure: Soil moisture readings (inches of moisture per 12 inches of soil) as affected by sagebrush control inside and outside the exclosure-1965 (Each figure is an average of readings in two access tubes.)

	Feb.27	Apr.19	June 9	July 2	Aug.3	Sep.4	Oct.4	Oct.14	Mean
Inside Spray									
6"	2.16	3.58	1.56	1.72	1.94	2.12	3.11	2.74	2.37
12"	1.22	1.62	1.55	1.92	2.15	2.21	2.34	2.35	1.92
18"	1.51	1.39	1.65	2.23	2.34	2.42	2.38	2.40	2.04
24"	1.43	1.31	1.62	2.29	2.42	2.44	2.35	2.38	2.03
36"	1.19	1.21	1.35	2.07	2.39	2.44	2.24	2.22	1.89
48"	1.17	1.22	1.22	1.87	2.33	2.37	2.16	2.23	1.82
60"	1.17	1.12	1.08	1.55	1.84	1.84	1.84	1.88	1.54
Mean	1.41	1.64	1.43	1.95	2.20	2.26	2.35	2.32	1.94
Inside Non-Spray									
6"	2.71	3.29	2.25	1.64	1.77	2.10	2.62	2.41	2.35
12"	1.96	2.98	2.59	1.63	1.46	1.62	1.85	1.89	2.00
18"	1.64	2.46	2.76	1.80	1.79	1.65	1.76	1.83	1.97
24"	1.66	2.05	2.74	1.85	1.71	1.73	1.68	1.74	1.90
36"	1.56	1.72	2.19	1.70	1.72	1.71	1.65	1.66	1.74
48"	1.64	1.82	1.80	1.48	1.76	1.75	1.73	1.74	1.72
60"	1.48	1.63	1.57	1.29	1.56	1.56	1.53	1.53	1.52
Mean	1.81	2.28	2.27	1.63	1.68	1.75	1.83	1.83	1.88
Outside Spray									
6"	3.09	3.40	2.42	1.62	1.71	1.81	2.85	2.49	2.42
12"	2.30	3.41	2.86	1.85	2.11	2.21	2.33	2.31	2.42
18"	2.30	2.61	3.48	2.31	2.33	2.38	2.30	2.32	2.50
24"	2.22	2.32	3.39	2.28	2.39	2.47	2.20	2.23	2.44
36"	2.38	2.55	2.94	2.31	2.60	2.68	2.46	2.52	2.56
48"	1.77	1.93	1.94	1.61	1.94	1.99	1.84	1.94	1.87
60"	2.01	1.85	1.80	1.48	1.81	1.87	1.83	1.80	1.81
Mean	2.29	2.58	2.69	1.92	2.13	2.20	2.26	2.23	2.29
Outside Non-Spray									
6"	2.64	3.51	2.70	1.88	1.84	1.94	2.76	2.46	2.47
12"	2.05	3.06	2.90	2.08	2.04	2.13	2.18	2.15	2.32
18"	2.32	3.32	3.21	2.63	2.49	2.59	2.46	2.51	2.69
24"	2.34	2.99	3.26	2.57	2.54	2.64	2.46	2.46	2.66
36"	1.95	2.05	2.47	2.11	2.14	2.23	2.03	2.07	2.13
48"	1.83	1.90	1.86	1.63	1.89	2.00	1.82	1.82	1.84
60"	1.58	1.63	1.53	1.32	1.52	1.65	1.50	1.50	1.53
Mean	2.10	2.63	2.56	2.03	2.07	2.17	2.17	2.14	2.23

Table 2. Smilo Exclosure: Soil moisture readings (inches of moisture per 12 inches of soil) as affected by sagebrush control inside and outside the exclosure - 1965 (Each figure is an average of readings in two access tubes.)

	Mar.7	Apr.19	June 4	June 29	Aug.8	Sep.4	Oct.5	Oct.14	Mean
Inside Spray									
6"	2.66	2.60	2.69	1.54	1.60	1.85	2.64	2.38	2.24
12"	1.83	1.83	2.34	1.54	1.69	1.69	1.75	1.77	1.80
18"	1.48	1.60	1.67	1.32	1.48	1.52	1.48	1.53	1.51
24"	1.54	1.61	1.61	1.29	1.54	1.54	1.53	1.54	1.52
36"	1.95	2.14	2.05	1.66	1.96	2.01	1.95	1.99	1.96
48"	2.76	2.94	2.91	2.28	2.73	2.82	2.76	2.78	2.75
60"	2.64	2.82	2.82	2.21	2.67	2.73	2.74	2.66	2.66
Mean	2.12	2.22	2.30	1.69	1.95	2.02	2.12	2.09	2.06
Inside Non-Spray									
6"	2.47	2.49	2.28	1.61	1.61	1.76	2.43	2.21	2.11
12"	1.79	1.88	2.19	1.55	1.73	1.70	1.83	1.82	1.81
18"	1.64	1.79	1.85	1.43	1.66	1.67	1.66	1.67	1.67
24"	1.83	1.95	1.97	1.56	1.82	1.89	1.87	1.84	1.72
36"	1.78	1.96	1.93	1.54	1.82	1.86	1.85	1.88	1.83
48"	1.55	1.74	1.66	1.36	1.58	1.63	1.59	1.65	1.60
60"	1.36	1.43	1.43	1.11	1.37	1.40	1.36	1.38	1.36
Mean	1.77	1.89	1.90	1.45	1.66	1.70	1.80	1.78	1.74
Outside Spray									
6"	2.58	2.79	2.97	2.14	2.08	2.22	2.65	2.50	2.49
12"	1.88	1.96	.232	1.92	1.93	1.87	1.90	1.93	1.96
18"	1.75	1.86	1.89	1.69	1.79	1.83	1.79	1.79	1.80
24"	1.80	1.94	1.92	1.67	1.85	1.89	1.87	1.84	1.85
36"	2.07	2.24	2.14	1.99	2.12	2.17	2.13	2.10	2.12
48"	1.63	1.74	1.76	1.42	1.65	1.66	1.67	1.66	1.65
60"	1.26	1.35	1.32	1.10	1.25	1.31	1.31	1.26	1.27
Mean	1.85	1.98	2.05	1.70	1.81	1.85	1.90	1.87	1.88
Outside Non-Spray									
6"	2.30	2.44	2.24	1.42	1.52	1.65	2.45	2.20	2.03
12"	1.76	1.83	2.08	1.57	1.75	1.68	1.81	1.78	1.78
18"	1.41	1.54	1.59	1.26	1.44	1.44	1.47	1.48	1.45
24"	1.27	1.42	1.42	1.14	1.35	1.33	1.36	1.37	1.33
36"	1.31	1.47	1.42	1.13	1.35	1.39	1.34	1.33	1.34
48"	1.65	1.81	1.76	1.42	1.71	1.72	1.73	1.70	1.69
60"	1.71	1.87	1.83	1.46	1.70	1.72	1.75	1.73	1.72
Mean	1.63	1.77	1.76	1.34	1.54	1.56	1.70	1.65	1.62

Table 3. Cumberland #1 Exclosure: Soil moisture readings (inches of moisture per 12 inches of soil) as affected by sagebrush control -1965 (Each figure is an average of readings in three access tubes.)

	Apr. 17	July 1	Sept. 3	Oct. 13	Mean
Inside Spray					
6"	5.39	3.65	2.28	3.25	3.64
12"	4.74	4.29	2.59	2.68	3.58
18"	3.39	4.06	2.76	2.60	3.20
24"	2.63	3.19	2.70	2.61	2.78
36"	2.76	2.78	2.83	2.77	2.78
48"	3.02	2.98	3.11	3.03	3.04
60"	3.04	3.00	3.06	3.02	3.03
Mean	3.57	3.42	2.76	2.85	3.15
Inside Non-Spray					
6"	5.07	2.65	2.32	3.43	3.37
12"	4.21	2.87	2.36	2.61	3.01
18"	3.13	3.39	2.69	2.69	2.98
24"	2.60	2.87	2.68	2.67	2.70
36"	2.71	2.64	2.74	2.70	2.70
48"	3.00	2.88	3.00	3.00	2.97
60"	3.05	2.95	3.00	3.01	3.00
Mean	3.40	2.89	2.68	2.87	2.96

Table 4. Cumberland #4 Exclosure: Soil moisture readings (inches of moisture per 12 inches of soil) as affected by sagebrush control -1965 (Each figure is an average of readings in three access tubes.)

	Apr. 17	July 1	Sept. 3	Oct. 13	Mean
Inside Spray					
6"	5.89	2.88	2.82	3.57	3.79
12"	5.91	2.88	2.84	3.63	3.82
18"	5.51	3.21	2.97	3.25	3.74
24"	3.75	3.25	2.96	3.02	3.24
36"	3.08	2.98	3.08	2.99	3.03
48"	3.04	2.84	3.05	3.01	2.98
60"	3.08	2.87	3.05	2.98	3.00
Mean	4.32	2.99	2.97	3.21	3.37
Inside Non-Spray					
6"	6.03	2.57	2.48	3.17	3.56
12"	6.10	2.75	2.58	3.26	3.67
18"	5.94	3.32	2.75	3.00	3.75
24"	5.36	3.41	2.60	2.69	3.52
36"	2.83	2.94	2.51	2.50	2.70
48"	2.60	2.57	2.56	2.60	2.58
60"	2.51	2.34	2.45	2.40	2.42
Mean	4.48	2.84	2.56	2.80	3.17

Table 5. Soil temperature reading in degrees centigrade from Granite Mountain and Smilo Exclosures-1965.

Granite Mountain Exclosure

Date	Time Period	Spray 1"	Spray 8"	Spray 15"	Spray 22"	Non-Spray 1"	Non-Spray 8"	Non-Spray 15"	Non-Spray 22"
Apr.19	1	12.00	4.50	3.00	2.00	13.00	5.00	4.00	3.00
May 9	2	14.00	2.80	2.60	2.20	16.00	3.80	3.20	3.10
June 9	3	24.00	12.50	11.50	10.00	24.50	14.00	13.00	11.50
June 30	4	35.43	17.67	15.73	14.60	33.50	19.13	16.90	15.77
Aug. 2	5	33.00	19.00	18.50	17.00	34.00	16.00	17.50	16.50
Sep. 5	6	21.65	13.43	13.40	14.07	22.25	13.03	13.03	13.83
Oct. 4	7	14.50	7.50	8.00	9.00	18.00	7.50	7.00	9.00
Oct. 11	8	12.75	8.90	10.00	10.20	16.65	9.35	10.05	10.75

Smilo Exclosure

Apr. 19	1	19.50	12.50	13.00	12.00	26.00	16.00	12.50	11.00
May 9	2	15.00	8.80	9.30	10.00	15.00	8.30	9.00	10.00
June 9	3	14.00	15.50	15.50	15.00	15.00	15.50	15.50	15.00
June 30	4	31.70	25.50	22.00	20.77	31.77	23.27	21.27	20.57
Aug. 2	5	23.00	23.50	23.50	23.00	23.00	24.00	23.50	23.00
Sep. 5	6	21.50	18.00	18.50	17.50	22.25	18.50	16.75	18.75
Oct. 4	7	19.00	12.00	12.50	12.50	23.00	12.50	12.50	12.50
Oct. 11	8	19.35	13.60	13.40	14.40	18.75	14.25	13.70	13.90

SECTION V

PRECIPITATION PATTERN STUDY, 1965

Introduction

During 1960 over 70 gauges were installed at 6 to 12 mile intervals throughout the Big Horn and Wind River Basins. Since that time, some 30 rain gauges have been installed on various exclosures and study sites throughout the western half of Wyoming. These gauges are simple cans, 12" in height and approximately 2" in diameter. This diameter allows reading of precipitation by merely pouring the water into a 100 ml cylinder, and converting ml readings to inches of rainfall. One hundred ml is equal to one inch of precipitation. The gauges are read on the same four dates each year - April 15, July 1, September 1 and October 15. Personnel of the Worland, Lander, Rawlins, and Rock Springs Districts of the Bureau of Land Management cooperated with the University in reading the instruments. Some of the gauges are read by personnel of the Soil Conservation Service and the Wyoming Game and Fish Commission.

The weather bureau and the U. S. Geological Survey precipitation data are used to provide additional information from independent locations. This cooperative effort provides an effective network for future evaluation of precipitation patterns. A map of precipitation gauge locations was presented in the 1963 report.

1965 Results

Precipitation data for 1965 from the University gauges are presented in Table 1; those from the U. S. weather bureau stations are presented in Table 2. The rain gauges located for general pattern studies of precipitation within the Big Horn Basin were discontinued after the July 1 reading. The others located in the Wind River Basin are to be continued in conjunction with studies being conducted by the Bureau of Land Management and the U. S. Geological Survey in that area.

Moderate amounts of precipitation occurred during the winter period from October 15, 1964 to April 15, 1965. Some areas received more than the normal amount of winter precipitation. The spring period from April 15, 1965 to July 1, 1965, was wetter than normal but associated cool temperatures retarded plant development. Summer precipitation from July 1 to September 1 was above normal with a number of high intensity storms that were quite wide-spread. Fall precipitation was about normal in most areas.

TABLE 1. Precipitation data for 1965 from University of Wyoming gauges for the periods - October 15-April 15 (Winter), April 15-July 1 (Spring), July 1-September 1 (Summer), and September 1-October 15 (Fall).

Rain Gauge Number	Rain Gauge Name	Winter	Spring	Summer	Fall	1965 Total	Long Term Average
1	Ant Hill Exc. - Worland	2.00	1.80	1.01	0.98	5.79	7.14
2	Farson Exclosure	1.51	3.53	1.90	1.28	8.22	5.38
4	Dutch Nick Flats Exc.	1.90	2.39	1.00	0.96	6.25	7.22
5	Ant Plot Exc. - Lander	2.22	3.15	1.07	1.36	7.80	7.93
6	Granite Mountain Exc.	2.44	3.55	2.48	0.51	8.89	8.09
7	Buffalo Creek Exc.	3.40	3.54	1.73	1.54	10.21	9.09
8	Demer Exclosure	1.82	3.20	0.80	1.08	6.90	8.06
9	Gov't Draw No. 1 Exc.	0.52	4.45	1.26	1.40	7.63	7.69
10	Boysen Reservoir Exc.	0.36	1.90	1.01	0.55	3.82	4.60
11	Sweetwater Exclosure	G.D.	3.00	2.27	1.85	7.12	6.60
12	Horse Creek Exclosure	4.84	3.39	2.44	1.00	11.67	11.73
13	West Pasture Exclosure	2.15	1.80	0.85	0.75	5.55	6.54
14	McGraw Flat Exclosure	3.04	5.45	1.43	1.20	11.13	9.15
15	15-Mile Study Pasture	2.02	1.84	1.03	0.72	5.61	6.88
16	Gov't Draw No. 2 Exc.	2.94	5.50	1.20	1.27	10.91	10.00
17	Burnt Wagon Exclosure	1.92	2.00	0.91	0.67	5.50	6.17
18	Cedar Mountain Exc.	3.35	5.41	1.70	1.93	12.39	9.00
19	Radio Tower Exclosure	3.25	3.99	2.06	2.01	11.31	7.35
20	Black Mountain Exc.	3.37	5.49	1.53	1.62	12.01	7.10
21	Kane Deer Exclosure	3.53	3.60	3.12	2.17	12.42	--
22	LU Juniper Study	1.93	8.00	4.24	2.55	16.72	--
23	Sheep Springs Exc.	5.61	5.26	2.00	1.55	14.42	14.21
24	Halogeton Pasture	1.36	2.31	1.90	0.80	6.37	5.63
25	Red Wash #3 Exclosure	5.71	5.15	2.78	1.10	14.74	9.20
26	Red Wash #1 Exclosure	4.34	4.09	3.39	1.51	13.33	8.55
27	Little Robber #5 Exc.	4.90	3.32	1.56	1.22	11.00	9.45
28	Red Wash #2 Exclosure	3.22	4.10	N.R.	4.32	11.64	7.32
30	Boars Tusk Exclosure	2.95	3.39	1.63	1.28	9.25	7.42
31	Cumberland Exclosure 1	5.18	N.R.	1.44	1.66	8.28	8.21
32	Cumberland Exclosure 2	N.R.	N.R.	2.32	2.65	4.97	6.44
33	Cumberland Exclsoure 3	5.62	N.R.	2.09	2.55	10.26	9.51
34	Cumberland Exclosure 4	4.93	N.R.	1.22	1.47	7.62	7.44
35	Elk Mountain Pit	N.R.	N.R.	1.78	2.52	4.30	--
36	Smilo Exclcsure	1.94	2.34	0.58	1.07	5.93	8.46
37	Sand Draw	1.01	2.25	*	--	--	6.40
38	Shephard Dome	2.19	2.60	*	--	--	9.04
39	Two-Mile Hill Exc.	3.51	3.02	0.80	1.16	8.49	10.90
40	North Butte	*					
41	Bud Kimbal Exclosure	2.61	3.04	0.64	1.16	7.45	9.36
42	Little Cottonwood Res.	2.67	3.15	*	--	--	10.01
43	Gov't Anderson Dry Hole	1.11	2.11	*	--	--	7.11
44	Gordon	3.26	4.80	*	--	--	11.37
45	Warner and Lewis	1.05	3.17	*	--	--	7.51
46	Gibbs Butte	1.73	3.12	1.32	0.56	6.73	6.86
47	Muskrat	1.33	3.06	1.43	0.71	6.53	6.44
48	Fuller Seed Plot	2.00	3.39	0.91	0.88	7.18	8.21
49	Canyon Creek	1.24	3.57	1.10	0.88	6.79	8.14

Rain Gauge Number	Rain Gauge Name	Winter	Spring	Summer	Fall	1965 Total	Long Term Average
50	Muskrat #5 Exclosure	2.40	2.85	1.28	1.02	7.55	8.31
51	Poison Creek	G.D.	G.D.	0.86	0.95	--	8.21
52	Alkali Flats	1.95	3.03	1.02	1.06	7.06	8.39
53	Cottonwood Pass Exclosure	10.0	5.10	*	--	--	--
54	Connor	1.35	2.43	*	--	--	--
55	Fraser Seed Plot	1.38	3.67	1.50	0.83	7.38	8.82
56	Logan #1 Exclosure	2.18	3.68	1.07	1.06	8.00	8.07
57	Logan #2 Exclosure	1.70	3.90	2.31	1.32	9.23	8.00
58	Empty Cartridge Exc.	2.05	3.20	G.D.	G.D.	--	7.17
59	Carter Divide Exc.	1.94	4.12	1.41	1.15	8.62	7.19
60	Dishpan Butte #1 Exc.	3.75	4.65	2.28	1.63	12.31	10.85
61	Dishpan Butte #2 Exc.	2.83	4.90	2.58	1.40	11.71	8.93
62	Hall Creek Divide Exc.	3.82	5.35	1.10	2.00	12.27	10.75
63	Little Popo-Agie	3.86	6.25	1.58	2.05	13.74	10.97
64	Hudson	2.20	4.09	1.42	1.60	9.31	8.53
65	Pan American	1.88	3.50	N.R.	1.25	6.63	7.53
66	Buffalo	2.54	4.18	*	--	--	11.52
67	Madden	2.32	3.10	0.72	1.11	7.25	9.43
68	Johnston	1.69	2.61	0.80	0.63	5.73	6.80
69	No Wood	4.52	5.21	*	--	--	13.94
70	Andrews	1.08	3.09	*	--	--	7.84
71	Hayes Brothers	1.76	2.81	*	--	--	8.85
72	Seaman	2.40	3.40	*	--	--	10.10
73	Black Mountain (Walker)	2.58	3.00	*	--	--	--
74	No Water (Canal)	1.87	2.70	*	--	--	--
75	Sand Gulch Exclosure	G.D.	3.56	0.70	G.D.	--	9.86
76	Cochran Exclosure	3.51	3.84	1.38	1.63	10.36	10.98
77	Kirby Creek Exclosure	N.R.	4.03	0.87	1.40	--	--
78	Devils Slide	4.28	4.13	*	--	--	--
79	Thermopolis	2.55	5.22	*	--	--	13.69
80	Poison Draw	1.38	2.80	2.50	0.40	7.08	7.29
81	Mack Ranch	1.40	2.62	1.10	0.72	5.84	7.77
82	Gardner Ranch	7.00	6.45	*	--	--	--
83	Hayes Ranch	6.46	5.65	*	--	--	--
84	Pumping Station	5.01	4.72	*	--	--	--
85	Bridger Creek	4.64	4.60	N.R.	1.55	10.79	12.46
86	Dry Creek	1.15	3.91	1.70	0.55	7.31	6.88
87	Hoodoo Creek	1.10	2.66	1.00	0.47	5.23	5.79
88	Comet Mine	2.35	5.08	1.83	1.64	10.90	13.08
89	Birdseye Ranch	2.99	3.09	1.04	1.14	8.26	8.32
90	Birdseye Pass	1.16	N.R.	*	--	--	--
91	Jones Ranch	6.40	3.75	*	--	--	--
92	Wildcat	1.75	2.79	*	--	--	--
93	Zimmerman	1.46	3.47	*	--	--	--
94	Lake Creek	3.42	4.64	*	--	--	--
95	Farson Guzzler #1	2.05	5.44	1.25	1.03	9.77	--
96	Farson Guzzler #2	2.96	4.66	1.20	1.11	10.93	--
97	Farson Guzzler #3	1.89	3.61	1.44	1.03	7.97	--
98	Farson Guzzler #4	1.95	3.47	1.93	1.06	8.41	--
99	Farson Guzzler #5	1.75	3.41	1.19	1.37	7.72	--

* - Discontinued N.R. - Not Read G.D. - Gauge Damaged and Replaced

TABLE II. Precipitation data from the U. S. Weather Bureau Stations for the period October 15, 1964 to October 15, 1965.[1]

Station Name	WINTER Oct. 15 to Apr. 15	SPRING Apr. 15 to July 1	SUMMER July 1 to Sept. 1	FALL Sept. 1 to Oct. 15	1965 Total[2]	Long Term Average[3]
BIG HORN BASIN						
Anchor Dam	5.79	6.75	1.20	1.85	15.59	11.75
Basin	1.58	2.35	1.77	1.68	7.38	6.21
Big Trails	5.44	2.15	0.83	0.00	8.42	--
Black Mountain	4.23	4.17	2.48	1.73	12.61	15.54
Cody 12 SE	4.60	5.12	2.18	0.74	12.64	11.60 E
Deaver	1.28	3.48	1.80	1.08	7.64	5.21
Emblem	3.62	4.11	2.29	0.96	10.98	10.97 E
Grass Creek	2.27	3.94	1.65	1.42	9.28	13.33
Greybull 1S	1.42	2.20	1.84	1.73	7.19	7.83
Heart Mountain	2.37	3.73	2.69	1.13	9.92	9.73
Lovell	1.64	3.96	1.78	1.01	8.39	6.92
Powell	1.75	3.62	2.53	1.02	8.92	5.67
Rairden 252 W	1.86	1.54	1.03	1.92	6.35	7.95
Shell	3.63	2.60	2.52	1.54	10.29	11.78
Tensleep	4.72	4.58	0.83	1.57	11.70	--
Tensleep 19 SSE	--	--	--	--	--	--
Thermopolis 9 NE	--	--	--	--	--	--
Thermopolis 25 WNW	3.49	4.70	4.88	1.47	14.54	9.60
Worland	1.33	1.93	0.91	0.97	5.14	7.76
Worland FAA AP	1.83	2.67	1.20	1.04	6.74	8.05
WIND RIVER BASIN						
Arminto	2.02	3.79	1.36	0.67	7.84	6.93 E
Boysen Dam	2.84	3.77	1.30	1.15	9.06	12.11
Diversion Dam	1.52	3.84	2.10	1.10	8.56	9.45
Fort Washakie	2.90	5.59	2.66	2.14	13.29	11.90
Gas Hills 4 E	2.78	3.96	1.40	0.68	8.82	11.26 E
Lander WB AP	3.25	5.83	1.85	2.62	13.55	13.58
Lost Cabin 1 NNE	1.96	3.30	1.19	1.09	7.54	7.25
Morton 1 NE	2.16	4.31	1.20	1.43	9.10	6.66
Pavillion	1.32	3.96	1.15	1.19	7.62	8.67
Riverton	1.67	3.04	1.73	1.17	7.61	8.79
Sand Draw	2.29	4.99	1.51	1.35	10.14	9.77
Shoshoni	1.35	3.08	1.55	0.78	6.76	7.00 E
SOUTHWEST WYOMING						
Farson	2.00	3.80	1.82	1.20	8.82	6.49
Kemmerer	3.84	6.14	1.95	2.15	14.08	11.05
Rock Springs	4.07	5.61	1.73	1.86	13.27	8.30
Rock Springs FAA AP	3.97	5.48	1.66	3.67	14.78	9.43
Wamsutter 1 N	2.07	3.05	0.28	1.23	6.63	5.58
Muddy Gap	1.83	6.02	2.08	1.34	11.27	10.47 E
Rawlins	2.82	3.88	2.02	3.64	12.36	8.43

[1]Weather Bureau. 1962-1963. Climatological Data - Wyoming. U. S. Dept. Commerce. Vols. 72 & 73.
[2]Computed for the period October 15, 1964 to October 15, 1965.
[3]Weather Bureau. 1963. Climatological Data - Wyoming Annual Summary. U.S. Dept. Commerce. Vol. 72, No. 13.

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